DOCUMENT RESUME

ED 274 548 SE 047 247

AUTHOR Porter, Andrew C.; And Others

TITLE Content Determinants (with Research Instrumentation Appendices). Research Series No. 179.

INSTITUTION Michigan State Univ., East Lansing. Inst. for Research on Teaching.

SPONS AGENCY Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE Sep 86
CONTRACT 400-81-0014
NOTE 178p.; Portions contain small print.
AVAILABLE FROM Institute for Research on Teaching, College of Education, Michigan State University, 252 Erickson Hall, East Lansing, MI 48824-1034 ($11.00).
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC08 Plus Postage.
DESCRIPTORS *Educational Policy; Educational Practices; Educational Research; Elementary Education; *Elementary School Mathematics; *Elementary School Teachers; *Mathematics Instruction; *Research Tools; Teaching Methods
IDENTIFIERS *Mathematics Education Research

ABSTRACT

This document summarizes research focused on the proposition that teachers determine what is taught in school, and presents new theoretical constructions to support analyses of school content and the methods used to determine school content. After background comments on the elementary school mathematics curriculum and the role of the teacher, the report focuses on sources of influence, beginning with an overview of five studies designed to determine how policies were developed and put into practice. Insights into the nature of content policymaking indicate that policies are relatively weak and fragmented when judged against the attributes of prescriptiveness, consistency, authority, and power. Nevertheless, they have influenced teacher practice, but not standardized that practice. Textbooks are viewed as resources, rather than as determinants of the content to teach. Little evidence exists to support the supposition that standardized tests have any important influence on teachers' content decisions, but curriculum-embedded tests do have important effects. How students, their parents, and principals affect content decisions are discussed, followed by an analysis of teacher convictions and some thoughts on curriculum. Instruments used in the studies are in the appendices. (MNS)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

Research Series No. 179

CONTENT DETERMINANTS
(with Research Instrumentation Appendices)

Andrew C. Porter, Robert E. Floden,
Donald J. Freeman, William H. Schmidt,
and John R. Schwille

Published By

The Institute for Research on Teaching
252 Erickson Hall
Michigan State University
East Lansing, Michigan 48824-1034

September 1986

This work is sponsored in part by the Institute for Research on Teaching, College of Education, Michigan State University. The Institute for Research on Teaching is funded primarily by the Office of Educational Research and Improvement, United States Department of Education. The opinions expressed in this publication do not necessarily reflect the position, policy, or endorsement of the Office or the Department. (Contract No. 400-81-0014)

Institute for Research on Teaching

The **Institute for Research on Teaching** was founded at Michigan State University (MSU) in 1976 by the National Institute of Education. Following a nationwide competition in 1981, the NIE awarded a second five-year contract to MSU. Funding is also received from other agencies and foundations for individual research projects.

The IRT conducts major research projects aimed at improving classroom teaching, including studies of classroom management strategies, student socialization, the diagnosis and remediation of reading difficulties, and teacher education. IRT researchers are also examining the teaching of specific school subjects such as reading, writing, general mathematics, and science and are seeking to understand how factors outside the classroom affect teacher decision making.

Researchers from such diverse disciplines as educational psychology, anthropology, sociology, and philosophy cooperate in conducting IRT research. They join forces with public school teachers who work at the IRT as half-time collaborators in research, helping to design and plan studies, collect data, analyze and interpret results, and disseminate findings.

The IRT publishes research reports, occasional papers, conference proceedings, a newsletter for practitioners, and lists and catalogs of IRT publications. For more information, to receive a list or catalog, and/or to be placed on the IRT mailing list to receive the newsletter, please write to the IRT Editor, Institute for Research on Teaching, 252 Erickson Hall, Michigan State University, East Lansing, Michigan 48824-1034.

Co-Directors: Jere E. Brophy and Andrew C. Porter

Associate Directors: Judith E. Lanier and Richard S. Prawat

Editorial Staff
Editor: Sandra Gross
Assistant Editor: Sally B. Pratt

Abstract

Using elementary school mathematics as the context for study, a program of IRT research reveals teachers as political brokers in the process of content determination. Empirical findings and new theoretical constructions from that work are summarized.

The content of instruction is specified by determining (1) how much time to allocate to a subject, (2) what topics to cover, (3) with which students, (4) when and in what order, and (5) to what standards of achievement. These five decisions served as the dependent variables for empirical investigations of how school policies, teachers' content repertoires, and other factors (e.g., students, parents, other teachers, school administrators) interact in the process of determining what is taught. Appendices provide the research instrumentation.

School policies bearing on the content of elementary school mathematics were found to be weak and fragmented relative to what is possible. Nevertheless these relatively weak policies had surprisingly strong effects upon teacher content practices, gaining their strength through persuasion. Policy compliance was rarely tied to rewards or sanctions. The paradox is explained by a general lack of attention given to content and by teachers' understandable reluctance to take full responsibility for deciding what is the most appropriate content for their students.

The general neglect for content deliberations has resulted in an elementary school curriculum badly out of balance. Heavy emphasis upon computational skills leaves little room for coverage of concepts and applications. Large numbers of topics are just touched on in instruction. Students are rarely, if ever, asked to formulate a problem for themselves. The research points toward policy-oriented solutions to these problems.

CONTENT DETERMINANTS

Andrew C. Porter, Robert E. Floden, Donald J. Freeman,
William H. Schmidt, and John R. Schwille[1]

Teachers determine what is taught in school. They create opportunities for students to learn the knowledge, skills, and dispositions that influence future productivity in school and in the social and vocational worlds beyond school. Teachers influence this effect by deciding what content to teach and by implementing strategies to engage students in that content.

This proposition has served as the central hypothesis for a line of research undertaken at the Institute for Research on Teaching (IRT). This paper summarizes what has been accomplished from those inquiries. New theoretical constructions have evolved to support analyses of school content and the methods used to determine school content. These constructions and their empirical bases have proven to be powerful mechanisms to understand practice and the ways it might be improved. The constructions also serve to elevate the importance of content in research on teaching and research on educational policy.

Starting with Content

Distinguishing between the content (what is taught) and the strategy (how content is taught) of instruction ensures consideration of each (Freeman,

---

[1]Andrew Porter is coordinator of the Content Determinants Project and a professor in the Department of Counseling, Educational Psychology and Special Education at Michigan State University. Robert Floden, Donald Freeman, William Schmidt, and John Schwille are senior researchers with the project. Floden, Freeman, and Schwille are professors in the Department of Teacher Education at MSU and Schmidt is a professor in the Department of Counseling, Educational Psychology and Special Education.

The authors were permanent members of the project whose work is summarized here. The contributions of those who were with the group for shorter periods of time are gratefully acknowledged: Linda Alford, Gabriella Belli, Zane Berge, Michael Gant, Susan Irwin, Frank Jenkins, Luci Knappen, Therese Kuhs, and Janet Vredevoogd.

1978). Only if instruction centers on important content does it have potential for being worthwhile. Yet, until recently, most researchers have taken content for granted, focusing their attention on methods instead (Schwille, Porter, & Gant, 1979; Schwille et al., 1979). Hesitancy to confront issues of what should be taught is understandable. Value judgments are required that cannot have their justification in empirical fact.

Distinguishing content from strategy elevates the importance of content and raises new questions. A framework which clarifies the distinction between content and strategy has evolved from IRT research. Teachers determine (a) how much time is allocated to a subject, such as mathematics, over the course of a school year, (b) what topics are taught, (c) to which students, (d) when and in what order each topic is taught, and (e) to what standards of achievement (Schwille et al., 1982). Collectively, these five decisions determine student opportunity to learn, a major influence on student achievement (e.g., Barr, Dreeben & Wiratchi, 1983; Carroll, 1963). They specify areas of content decision making for teachers, separate from decisions about strategy. They suggest a series of questions that teachers, policymakers and consumers of education can use to monitor the content of schooling. They form the dependent variables in IRT research on teacher content decision making.

Understanding content also requires operational definitions of topics within a content area. Elementary school mathematics serves as the focus for IRT research on content decision making. Mathematics is a basic skill learned primarily in school. Because of the many important mathematics topics and the limited amount of school time allotted for them, decisions about what content to include in the curriculum are crucial. Nevertheless, elementary school mathematics provides a conservative test of the importance of teachers' content decisions because most people believe the content to be fairly standard (e.g., fourth graders study multiplication).

A three-dimensional taxonomy to describe the content of elementary school mathematics provides definitions of topics that may or may not be studied in elementary school (Kuhs et al., 1979). The three dimensions of the taxonomy describe general intent (e.g., conceptual understanding, skills, applications), the nature of material presented to students (e.g., fractions, decimals), and the operation the students must perform (e.g., estimate, multiply). The terminology and specificity of the taxonomy are based largely on an interview study of content distinctions made by elementary school teachers (Schmidt, Porter, Floden, Freeman & Schwille, in press; see also Appendix A for the interview). Specific topics are represented by the intersections of these three dimensions (e.g., story problems involving addition of fractions, basic multiplication facts, understanding the relationship between multiplication and division). More general topics are addressed by the marginals of the taxonomy (e.g., emphasis given to conceptual understanding). Because topics can be defined at different levels of specificity, because the taxonomy has a structure which makes clear both what is taught and what is not taught, and because the distinctions made reflect ways in which teachers think and talk about their mathematics instruction, the taxonomy, when coupled with the other four attributes of content decision making, provides a language to support deliberations about content by practitioners, policymakers, and researchers (e.g., Freeman, Kuhs, Knappen, & Porter, 1982; Porter, 1983a).

The results from content analyses of instructional materials illustrate the power of this taxonomy of elementary school mathematics topics. Analyses of four commonly used fourth-grade textbooks and the five most commonly used nationally normed standardized tests of mathematics achievement (at the same grade) reveal that of the 385 topics covered by at least one of these published materials, only six topics are common to all nine. Among the textbooks, 19

topics define a core curriculum on which approximately half of the exercises in each book are focused, but the other parts of the books are idiosyncratic in their topic coverage (Freeman, Kuhs, et al., 1983). The image of a national curriculum in elementary school mathematics begins to fade, and the problems of curricular validity in educational assessment begin to emerge (Floden, Porter, Schmidt & Freeman, 1980; Porter, Schmidt, Floden, & Freeman, 1978; Schmidt, Porter, Schwille, Floden, & Freeman, 1982; Schmidt, 1983).

The Role of the Teacher: Bounded Rationality

At least in elementary school mathematics, teachers serve as political brokers in the process of content determination (Lipsky, 1980; Schwille et al., 1982). Teachers have some discretion to follow their own convictions but they are subject to a variety of factors that bear on their content decisions. Decisions about academic content, however, are not always primary for teachers. Teachers often plan in terms of activities rather than content outcomes (Clark & Yinger, 1979); for many elementary school teachers, academic content takes second place to other goals of schooling, such as promoting good citizenship among students (Prawat & Nickerson, 1985).

In the absence of other advice, teachers are likely to follow their own repertoire and convictions. They will teach what they have taught before, what they feel comfortable with, and what they deem appropriate for their students. But teaching does not take place in a vacuum. Advice on what to teach comes from a variety of sources and in many different forms. Students and their parents can have direct and indirect effects on what is taught. Other teachers, the school principal, the district curriculum coordinator, a university professor all serve as potential sources of advice, as do materials and position statements from professional organizations. These interpersonal and organizational influences bear directly on teachers and operate in addition to

federal, state, district, and school policies. Mathematics objectives, testing programs, mandated textbooks, promotion policies, and time guidelines all address aspects of content decision making.

The teacher stands between the content messages from these various sources and the students to be taught. The effects of advice or prescription on what to teach are mediated by the teacher's own convictions about what should be taught. To have an effect on a teacher's content decisions, then, an external influence must either change the teacher's conception about what is most desirable (i.e., persuade the teacher) or override the teacher's beliefs, forcing the teacher to comply even though the request is not viewed as appropriate. Effects of both types have been found, although persuasion is clearly the dominant form (Schwille et al., 1986; Floden et al., 1986; Porter, 1983).

Sources of Influence

An Overview of Five Studies

Two early studies of teacher content decision making in elementary school mathematics led to increased attention on school policies (Floden, Porter, & Schwille, 1980; Schwille et al., 1982). In both of those studies school policies appeared to be among the strongest influences on what is taught, after the teacher's own convictions. Policy effects were not uniform, however, and the range of policies considered was limited. Based on that early work and previous analyses of educational policies (particularly Spady & Mitchell, 1979), a fourfold structure was hypothesized for explaining differences in policy strength.

Policies can vary in their prescriptiveness, consistency, authority, and power. Prescriptiveness refers to the extent and specificity of a policy in telling teachers what to do. A mandated textbook is less prescriptive than a

mandated textbook that teachers are instructed to follow closely, starting at the beginning and carrying through to completion. Consistency refers to links among policies, describing how policies can contradict or reinforce each other. For example, a mandated textbook may be tied to mathematics objectives through a guide that describes pages in the book on which material is found for each objective. Policies can gain authority through appeal to law, social norms, expert knowledge, or support from charismatic individuals. Rewards and sanctions tied to policies give them power. Five studies have been completed, each of which addresses a different aspect of teacher content decision making in elementary school mathematics and all of which provide empirical tests of the four-attribute structure for describing the strength of content policies.

The earliest study (1978) used policy-capturing methodology to investigate the effects of six possible sources of advice on teachers' topic selection: a district mandated textbook; objectives published by the district; tests with results published by grade level and building in the local newspaper; advice from the principal; advice from upper grade teachers; and advice from parents (Floden et al., 1980). Sixty-six fourth-grade teachers were asked to imagine they had transferred to a new school and were to teach a class of fourth graders capable of fourth-grade work. They were then asked how likely they would be to add five topics that they had not been teaching and how likely they would be to drop five topics they had been teaching (see Appendix B for the policy-capturing questionnaires on curriculum decision making, teacher background, and current school).

A second study (1979-1980) moved the work from the controlled setting of simulations to the real world of classrooms. Seven third- through fifth-grade teachers in six schools across three school districts were studied for a full school year to determine the mathematics content they taught, the advice they

received concerning what should be taught, and the relationships between the two. Content was described through daily teacher logs (collected weekly). Advice was monitored through interviews (weekly), questionnaires, observations, analyses of district and state policies and practices, and by attending meetings with the teachers or district-level meetings at which mathematics content might be discussed. The findings from these first two studies led to the design and completion of a series of three studies focusing on the nature and effects of state- (1981), district- (1982), and school-level policies (1982-1985).

For the study of state policies, seven states were selected to represent variation in types of policies, overall strength of policies, and school populations served: California, Florida, Indiana, Michigan, New York, Ohio, and South Carolina (Schwille et al., 1986). For each state, a complete set of documents on relevant policies and practices was assembled (e.g., objectives, testing, textbooks, allocation of time, school evaluation, teacher qualifications and promotion of specific topics). Documents were identified and additional information collected through interviews with knowledgeable persons in each state (an average of eight persons per state).

In the second of the three studies, district policies, their relationships to state policies, and their perceived effects were studied in five of the seven states (Floden et al., 1986). Questionnaires were used to collect information from district mathematics coordinators, principals, and teachers using a probability-in-proportion-to-student-enrollment design for each state. Questionnaires asking about the nature of policies and their perceived effects were designed along the lines of the four-attribute structure to describe policy strength (see Appendix C for survey questionnaires).

The third and final study once again brought the work back to the classroom. The effects of state-, district-, and school-level policies were

Research Series No. 179

CONTENT DETERMINANTS
(with Research Instrumentation Appendices)

Andrew C. Porter, Robert E. Floden,
Donald J. Freeman, William H. Schmidt,
and John R. Schwille

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Andrew C. Porter

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

examined for 32 fourth- and fifth-grade teachers in six Michigan school districts (Porter, 1986). Teachers provided descriptions of their daily mathematics instruction during 1982-83, using teacher logs and weekly questionnaire (see Appendix D) for each of three target students (differing in perceived ability). Districts were selected to contrast types of content relevant policies; schools were selected to contrast student body socioeconomic status; teachers were selected to contrast grouping practices when teaching mathematics. Teachers were interviewed and completed questionnaires over a three-year period to provide information on their content decision making and on their understanding of school, district, and state policies and practices concerning mathematics content (see Appendix E for teacher interviews and Appendix F for questionnaires). District curriculum coordinators were also interviewed over the same three-year period and documents describing district policies and practices identified in those interviews were obtained so that shifts in district policy formulation over time could be monitored (see Appendix G for the curriculum coordinator interview). Principals were interviewed at the time teacher logs were collected to determine school-level policies and practices and to understand how principals promote state and district policies and practices (see Appendix H for the principal interview).

Weak Policies, Strong Effects

The five studies provide insight into the nature of content policymaking at the state, district, and school levels and the influences of those policies on teachers' practices. The picture that emerges is one of relatively weak and fragmented policies when judged against the attributes of prescriptiveness, consistency, authority, and power but also one of increasing policy activity over time. States, districts, and schools differ sharply in their approaches to content policy formulation. New York, South Carolina, Florida, and

California have policies similar to the centralized national school systems of Europe; the policies specify what to teach and to what standards, although even these states differ in the extent to which their policies appear to challenge teacher practice. The policies of other states, such as Indiana and Ohio, operate indirectly, imposing requirements on school districts without directly telling teachers what to do. For example, Ohio has no state testing program, but the state requires school districts to have their own testing programs. Some states, such as Michigan, place great trust in local school districts and the individual classroom teachers, avoiding prescriptions about what should be taught and to what standards of achievement (although even Michigan has a minimum objectives testing program that districts and teachers may look to for guidance, Schwille et al, 1986).

Like states, districts also differ in the breadth and strength of their content policies. A relationship, however, exists between state and district policy practices; district policy formulation is more active in states which are also active in content policy formulation. Districts tend to extend and elaborate state policies rather than fill in areas in which states have not been active (Freeman, 1983; Cohen, 1982).

At least in elementary school mathematics, policies tend to be only mildly prescriptive; nor are they carefully constructed to be mutually reinforcing (although neither do they contradict each other). Little evidence exists which ties teacher compliance to rewards and sanctions, nor do teachers view this to be the case. Rather, policies attempt to persuade and gain their strength through appeals to authority. Involving experts (both teachers and mathematics education experts) in the formulation of policies is the most common method for giving authority to policies. Considerable attention is also given to building policy strength through appeals to legal authority, consistency with social norms, and support from charismatic individuals (Floden et al., 1986).

Because policies rely on authority more than on power, teachers' conceptions of appropriate topics to teach are generally reflected in the policies teachers adopt. Thus, unless there is a push in a new direction, even when policies are discontinued teachers tend to continue their content practices as though the policies were still in effect.

State, district, and school content policies are relatively weak (at least from a theoretical perspective); thus, their influence on teacher content practices is surprising. Virtually every teacher studied has had his or her mathematics instruction influenced in important ways by one or more school policy. Yet the effects of content policies have not standardized teacher practice (e.g., Schmidt, Porter, Floden, Freeman, & Schwille, in press). Perhaps because the content policies are not as prescriptive as they might be, or strong in other ways, teachers interpret policies differently. For example, in one district with a management-by-objectives system for elementary school mathematics, one teacher used the system to individualize mathematics during one period of the day but also taught mathematics during an additional period using a different textbook and whole group instruction. Another teacher used the system as a template for deciding what to teach, when, and to what standards of achievement to each of his students, allowing students to leave the system only after they completed objectives well beyond their current grade level. Yet a third teacher only referred to the district objectives occasionally when planning instruction (Porter & Kuhs, 1982).

In another district that had recently adopted a new textbook, one teacher followed the book page by page, recognizing that the desired effect of a standardized curriculum in the district would be achieved only by following the book closely. Another teacher, not recognizing the motivation behind the single text adoption, followed her own strong convictions about what content

should be taught and when, using the text only as a resource for student exercises that fit her own internal syllabus (Freeman & Schmidt, 1982).

Textbooks and Tests As Special Cases

One of the myths exposed through work on teacher content decision making is that teachers teach the content in their textbook (Porter, 1985). Elementary school teachers view mathematics textbooks as resources to be drawn from and to be added to as seems appropriate (this belief remains unchallenged even when the textbook is mandated). Further, because textbooks do not address several of the most important content decisions, their influence is limited primarily to topic selection. Textbooks contain few instructions about how much time should be allocated to mathematics or about differences among students concerning what should be taught; they offer ambiguous advice about standards to which students should be held. Even in topic selection, most teachers cover only a fraction of their textbook's content (e.g., Freeman, 1983) and spend 10% to 20% of mathematics instruction time covering topics not in the book.

Another myth exposed as being only a half truth is that teachers teach topics that are tested. Little evidence exists to support the supposition that national norm-referenced, standardized tests administered once a year have any important influence on teachers' content decisions. There are, however, important effects from curriculum-embedded tests (e.g., tests tied to objectives in a management-by-objectives system, chapter tests in a textbook, tests developed by teachers to help make placement decisions). Tests have effects on content decisions only when they have been explicitly tied to the curriculum and when they are readily accessible and easily used by teachers (Kuhs et al., 1985).

Student Effects

Teachers' content decisions are also influenced by students and students' parents. Sometimes the effects are direct, coming in the form of requests to cover specific topics or requests for more homework. More often the effects are indirect, coming in the form of expectations. Student and parent effects are not random; they correlate in important ways to student characteristics such as aptitude, gender, and ethnicity.

When mathematics is taught to ability groups or to individuals, within-class content differences are dramatic. Primarily these differences concern the topics of study, rather than the total amount of time spent or the standards to which students are held. Low-ability students spend far more time learning facts and computational skills whereas students of higher ability spend more time understanding mathematical concepts and applications. High-ability students cover more topics and spend less time per topic than do low-ability students (Irwin et al., 1985).

Individualized instruction shows some evidence of gender effects. Girls encounter a larger number of topics whereas boys study fewer topics for more time. Boys study topics that involve more conceptual understanding, more applications and more work with pictures. Some evidence suggests an interaction between perceived ability and ethnicity. Regardless of beginning achievement scores, black girls study fewer topics than do other students, including fewer topics related to conceptual understanding and applications (Irwin et al., 1986a).

Whole-group instruction, however, is the primary method used to teach elementary school mathematics, minimizing differences in content among students within classrooms. Further, for a given teacher, the effects of differences among groups of students across years appear to be minimal. Even when a class

is judged by the teacher to be unusually good or unusually "slow," modifications to accommodate those differences are slight. The large effects of students on teacher content decision making take place at the aggregate level. The socioeconomic status (SES) of the school student body correlates with the degree of parental influence on content, the instructional resources available to teachers, the amount of time spent on mathematics, and the topics covered (Irwin et al., 1986b). In affluent neighborhoods, parents are seen as a legitimate source of advice, generally concerned with what their children are taught. In schools that serve working class or unemployed families, parents are viewed as uninterested in particular content, even lacking the understanding required to help their children. Lower SES schools have fewer resources available for mathematics instruction. Lack of rulers and protractors affects work in measurement and geometry, and limited textbook availability affects the frequency of homework assignments. High SES schools spend less time on mathematics but cover more topics than do lower SES schools. Lower SES schools emphasize more computation and less application and concept instruction.

The correlations between the content of instruction and student characteristics are problematic. There is a tension between the amount of time students need to master content and the range of content they can cover. If understanding mathematical concepts and applications is important, however, then all students deserve an opportunity to study that content. Schools and teachers must be attentive to and must manage the dilemma to provide time for mastery as they assure access to useful content.

The Case of the Missing Principal

In this summary of content determinants research, policies are featured because of their surprisingly strong effects and because the number and strength of content policies is increasing at both state and district levels.

Principals are featured for the opposite reasons. Despite literature emphasizing the importance of principals in school leadership and the adoption of innovations, principals are not a major influence on teachers' decisions about what to teach in elementary school mathematics.

The literature on principal leadership and this conclusion about content decision making are not necessarily contradictory. On the rare occasions when principals have attempted to exert influences on content, teachers have accepted the attempts as legitimate and the influence of those attempts was felt in classroom practices. But most principals remain silent on content preferences, leaving content decision making to their teachers at the classroom level and to policymakers at higher levels. Even more surprising, principals show little interest in ensuring that teachers carry out district policies. Many principals have little knowledge of district policies, devoting their efforts instead to such noncontent areas as student discipline and attendance (Floden et al., 1984).

Teacher Convictions

Differences among teachers in the content of their elementary school mathematics instruction are more substantial than can be attributed wholly to differences in policies, students, principals, or other external factors. For example, teachers at the same grade level have been found to differ in their allocation of time to mathematics by a factor of 1.5 (9000 minutes versus 6000 minutes across a full school year). Of similar magnitude, differences among teachers exist concerning the average amount of time per topic. Teachers agree in their emphasis on computational skills over concepts or applications, but within that emphasis, percentage of time devoted to computational skills ranges from a low of 55% to a high of 80%. At the level of specific topics, the differences among teachers are too many to summarize. Some of these

differences may even out over years for students, but students with a teacher who fails to cover geometry or who gives little attention to estimation or measurement applications are unlikely to have those omissions compensated for by other teachers in later grades.

Differences among teachers in the content of their elementary school mathematics instruction are partially a function of differences in convictions about mathematics. Teachers differ in their knowledge of mathematics, in their interest and enjoyment in teaching mathematics, in their beliefs about the importance of mathematics and the most important topics within mathematics, and in their expectations for what students can accomplish. But just as content policies have been judged to be relatively weak, elementary school teachers' convictions about mathematics are also weak. Elementary school teachers are reluctant to take responsibility for content decisions and often appear unaware that they do indeed make mathematics content decisions. During interviews, teachers often said that no one had ever asked about their mathematics content before. When asked to keep content logs, many teachers expressed keen interest in the results and some planned to monitor their own instruction in future years. Clearly, most elementary school teachers do not spend much time analyzing the appropriateness of the content of their mathematics instruction. Their positions on content remain largely unexamined, by them or by anybody else.

A few elementary school teachers do hold strong convictions about mathematics, looking primarily to their own beliefs to decide the content of their instruction. But these teachers are in a distinct minority. Curiously, they are not necessarily the teachers who possess the greatest subject matter knowledge (Freeman, 1986).

Generally, elementary school teachers are willing to change their mathematics content if (a) they view the change as being not too difficult,

(b) what they are asked to do is within their range of knowledge, and (c) the request adds new content and does not give up content they have been teaching (a point given more attention later). In the case of textbook adoptions, teachers' willingness to try new content takes an unusual twist. Teachers tend to follow a textbook most closely during the initial year of use. Once they have become familiar with a textbook and know what it has to offer, teachers feel greater freedom to make adjustments and introduce some of their own preferences. The inclination to drift away from the book over time might be offset by policies that specify how teachers are to use their texts, but such policies rarely exist.

Some Thoughts on the Curriculum

Research on teacher content decision making in elementary school mathematics has not sought to evaluate the quality of the curriculum. Nevertheless, certain features stand out, virtually demanding comment. A ubiquitous and pronounced lack of balance exists across concepts, skills and applications. Teachers spend a large amount of their mathematics time teaching computational skills--approximately 75%. The remaining time is distributed between teaching for conceptual understanding and applications in ways that vary from teacher to teacher. Most textbooks and minimum competency or basic skills objectives emphasize computation; however, nationally normed standardized achievement tests have balance across conceptual understanding, applications, and computational skills (Freeman, Belli, et al., 1983). The lack of balance in teacher attention to conceptual understanding, skills, and applications is problematic and should be addressed. Applications are both more important and more difficult to learn than are skills. Conceptual understanding is probably of more lasting value than either skills or applications. By formulating policies that

are prescriptive, consistent, and carefully tied to sources of authority, it should be possible to create a more balanced curriculum.

A second feature of the elementary school mathematics curriculum is related to the first. Just as teachers devote a great deal of time to a relatively few computational skills, they tend to cover a large number of topics in the small amount of remaining time. Seventy to eighty percent of the topics taught during a school year receive 30 minutes or less of instruction. Many of these topics are "touched on" or "taught for exposure," receiving only 5 or 10 minutes of attention during the year. In part, this phenomenon may be explained by a similar pattern of topic coverage in textbook exercises. The practice of covering many topics, each for a little time, also may be a function of teachers' greater willingness to take on new topics in their instruction than to give up topics they have been teaching. Whatever the reasons, the elementary school mathematics curriculum is thin and appears to be getting thinner. The practice of teaching for exposure raises questions about how much instructional time on a topic is enough. Are students learning that mathematics includes a wealth of interesting topics or are they learning that superficial knowledge (knowing just a little about a lot of different things) is somehow valuable?

A third feature of the elementary school mathematics curriculum concerns what is missing. Students are rarely, if ever, asked to formulate a problem for themselves. Instead they are given problems to solve. Mathematics receives little attention as a discipline worth knowing in its own right in addition to being a basic skill with utilitarian value. Even the utilitarian aspects of mathematics receive too little serious attention. For example, young women's and minorities' lack of valuing of mathematics is not sufficiently challenged by information about the mathematics prerequisite to qualify for later study and for many job possibilities.

Finally, although the elementary school mathematics curriculum is second in importance only to reading and language arts, it is treated as a distant second. Only a small amount of time is allocated to mathematics instruction. A few classrooms spend an hour or so a day on mathematics, but most classrooms average much less; some average as little as 20 minutes. Teacher choice seems to be an important determinant of the amount of classroom time spent on mathematics and low averages may reflect teachers' dislike of math (e.g., Buchmann & Schmidt, 1981).

Summary

Until recently, educational research has focused attention on the strategies of instruction. Content received little attention. By distinguishing between strategy and content and by focusing on content, a great deal has been learned about teaching practices and about the interaction between educational policies (and other external factors) and teachers' convictions. The following commonly held beliefs have been challenged:

- There is a national curriculum in elementary school mathematics.
- From the perspective of content covered, materials are interchangeable.
- What is taught in one classroom closely resembles what is taught in another classroom at the same grade level.
- Textbooks determine the content of instruction.
- Teachers are resistant to top-down calls for change in matters of content.
- Policies have their effect through the manipulation of rewards and sanctions.
- Teacher autonomy is better than central control.
- Individualized instruction is better than group instruction.
- Instruction is better when teachers make substantial deviations from commercially prepared materials.

Partly as a result of research on content determinants, publishers of instructional materials are now much more aware of and concerned about curricular validity. Similarly, schools are more concerned about issues of curriculum alignment. Those responsible for monitoring education are more aware of the need to monitor the content of instruction as well as other aspects of educational inputs, processes, and outputs (e.g., the framework for describing elementary school mathematics has served as input to the National Research Council's Committee on Indicators of Precollege Science and Mathematics Education and is under consideration by the Center for Educational Assessment of the Council of Chief State School Officers). Teacher education programs are beginning to address the teacher's role in content decision making, an aspect of the teacher education curriculum that was largely missing. Educational research, especially research on teaching, now recognizes the importance of differences among teachers in their emphases on academic content. Increasingly, research studies focus on content decision making and the ways teachers make use of instructional materials.

Work on content policies and their effect is more recent and less visible. Nevertheless, the work points to a middle ground between two developments which seem on a collision course. On the one hand, centralized control of the curriculum is increasing. States and districts are developing policies which specify what is to be taught, to whom, and to what standards of achievement. On the other hand, there is increasing concern for the status of the teaching profession. Recommendations are for greater teacher autonomy and greater teacher participation in school policy formulation. But central control versus teacher autonomy may be a false dichotomy. Content policies will be persuasive to teachers if teachers are meaningfully involved in establishing those policies. Under those conditions, compliance and professional autonomy become two sides of the same coin.

References

Barr, R., Dreeben, R., & Wiratchai, N. (1983). How schools work. Chicago: University of Chicago Press.

Buchmann, M., & Schmidt, W. H. (1981). Six teachers' beliefs and attitudes and their curricular time allocations. Elementary School Journal, 84, 162-171.

Carroll, J. (1963). A model for school learning. Teachers College Record, 64, 723-733.

Clark, C. M., & Yinger, R. J. (1979). Three studies of teacher planning (Research Series No. 55). East Lansing: Michigan State University, Institute for Research on Teaching.

Cohen, D. K. (1982). Policy and organization: The impact of state and federal educational policy on school governance. Harvard Educational Review, 52, 474-499.

Floden, R. E., Alford, L., Freeman, D. J., Irwin, S., Porter, A. C., Schmidt, W. H., & Schwille, J. R. (1984, April). Elementary-school principals' role in district and school curriculum change. Paper presented at the annual meeting of the American Educational Research Association, New Orleans.

Floden, R. E., Porter, A. C., Alford, L. E., Freeman, D. J., Irwin, S., Schmidt, W. H., & Schwille, J. R. (1986). Instructional leadership at the district level: A framework for research and some initial results. Manuscript submitted for publication.

Floden, R. E., Porter, A. C., & Schwille, W. H. (1980). Responses to curriculum pressures: A policy-capturing study of teacher decisions about content. Journal of Educational Psychology, 73, 129-141.

Floden, R. E., Porter, A. C., Schmidt, W. H., & Freeman, D. J. (1980). Don't they all measure the same thing? Consequences of selecting standardized tests. In E. L. Baker & E. S. Quellmalz (Eds.), Educational testing and evaluation: Design, analysis, and policy (pp. 109-120). Beverly Hills: Sage.

Freeman, D. J. (1978). Conceptual issues in the content/strategy distinction (Research Series No. 21). East Lansing: Michigan State University, Institute for Research on Teaching.

Freeman, D. J. (1983, April). Relations between state and district policies. Paper presented at the annual meeting of the American Educational Research Association, Montreal.

Freeman, D. (1986, April). The strength of teachers' convictions as a determinant of student opportunity to learn. Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Freeman, D., Belli, G., Porter, A., Floden, R., Schmidt, W., & Schwille, J. (1983). The influence of different styles of textbook use on the instructional validity of standardized tests. Journal of Educational Measurement, 20, 259-270.

Freeman, D., Kuhs, T., Knappen, L., & Porter, A. (1982). A closer look at standardized tests. Arithmetic Teacher, 29(7), 50-54.

Freeman, D. J., Kuhs, T. M., Porter, A. C., Floden, R. E., Schmidt, W. H., & Schwille, J. R. (1983). Do textbooks and tests define a national curriculum in elementary school mathematics? Elementary School Journal, 83, 501-513.

Freeman, D., & Schmidt, W. (1982). Textbooks: Their messages and their effects. A paper presented at the annual meeting of the American Educational Research Association, New York.

Irwin, S., Alford, L., Berge, Z., Floden, R., Freeman, D., Porter, A., Schmidt, W., Schwille, J., & Vredevoogd, J. (1985, April). Grouping practices and opportunity to learn: A study of within-classroom variations in content taught. Paper presented at the annual meeting of the American Educational Research Association, Chicago.

Irwin, S., Alford, L., Berge, Z., Floden, R., Freeman, D., Porter, A., Schmidt, W., Schwille, J., & Vredevoogd, J. (1986a, April). Gender and elementary mathematics: Where do differences begin? Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Irwin, S., Alford, L., Berge, Z., Floden, R., Freeman, D., Porter, A., Schmidt, W., Schwille, J., & Vredevoogd, J. (1986b, April). The effects of school socioeconomic status on student opportunities to learn mathematics. Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Kuhs, T., Porter, A., Floden, R., Freeman, D., Schmidt, W., & Schwille, J. (1985). Differences among teachers in their use of curriculum-embedded tests. Elementary School Journal, 86, 141-153.

Kuhs, T., Schmidt, W., Porter, A., Floden, R., Freeman, D., & Schwille, J. (1979). A taxonomy for classifying elementary school mathematics content (Research Series No. 4). East Lansing: Michigan State University, Institute for Research on Teaching.

Lipsky, M. (1980). Street level bureaucracy: Dilemmas of the individual in public services. New York: Russell Sage Foundation.

Porter, A. C. (1983a). The role of testing in effective schools. American Education, 19(1), 25-28.

Porter, A. C. (1983b, April). Policies perceived to have impact. Paper presented at the annual meeting of the American Educational Research Association, Montreal, Canada.

Porter, A. C. (1985). Can a book be the curriculum? Invited address, Textbook Conference, Council of Chief State School Officers and National Association of State Boards of Education, Washington, DC.

Porter, A. C. (1986, April). The design of a longitudinal study to fit a cumulative program of research on teachers' content decision making. Paper presented at the annual meeting of the American Educational Research Association, San Francisco.

Porter, A. C., & Kuhs, T. (1982, April). A district management-by-objectives system: Its messages and effects. Paper presented at the annual meeting of the American Educational Research Association, New York.

Porter, A. C., Schmidt, W. H., Floden, R. E., & Freeman, D. J. (1978). Practical significance in program evaluation. American Educational Research Journal, 15, 529-539.

Prawat, R. S., & Nickerson, J. R. (1985). The relationship between teacher thought and action and student affective outcomes. Elementary School Journal, 85, 529-540.

Schmidt, W. H. (1983). Content biases in achievement tests. Journal of Educational Measurement, 20, 165-178.

Schmidt, W. H., Porter, A. C., Floden, R. E., Freeman, D. J., & Schwille, J. R. (in press). Four patterns of teacher content decision making. Journal of Curriculum Studies.

Schmidt, W. H., Porter, A. C., Schwille, J. R., Floden, R. E., & Freeman, D. J. (1982). Validity as a variable: Can the same certification test be valid for all students? In G.F. Madaus (Ed.), The courts, validity and minimum competency testing (pp. 133-151). Boston, MA: Kluwer-Nijhoff.

Schwille, J. R., Porter, A. C., Alford, L., Floden, R., Freeman, D., Irwin, S., & Schmidt, W. (1986). State policy and the control of curriculum decisions: Zones of tolerance for teachers in elementary school mathematics (Research Series No. 173). East Lansing: Michigan State University, Institute for Research on Teaching.

Schwille, J., Porter, A., Belli, G., Floden, R., Freeman, D., Knappen, L., Kuhs, T., & Schmidt, W. (1982). Teachers as policy brokers in the content of elementary school mathematics. In L. Shulman & G. Sykes (Eds.), Handbook of teaching and policy (pp. 370-391). New York: Longman.

Schwille, J., Porter, A., & Gant, M. (1979). Content decision making and the politics of education. Educational Administration Quarterly, 16, 21-40.

Schwille, J., Porter, A., Gant, M., Belli, G., Floden, R., Freeman, D., Knappen, L., Kuhs, T., & Schmidt, W. (1979). Factors influencing teachers' decisions about what to teach: Sociological perspectives (Research Series No. 62). East Lansing: Michigan State University, Institute for Research on Teaching.

Spady, W. G., & Mitchell, D. E. (1979). Authority and the management of classroom activities. In D. L. Duke (Ed.), Classroom Management (78th yearbook of the National Society for the Study of Education, pp. 75-115). Chicago: University of Chicago Press.

INDEX OF INSTRUMENTATION

		Page
Appendix A.	Content Decisions: Teacher Interview (Spring 1979)	27
Appendix B.	Policy-Capturing Study Questionnaires (1978)	35
	1. Curriculum Decision Making	37
	2. Background	41
	3. Current School	42
Appendix C.	Five-State Survey of School District Policy Questionnaires (1982)	45
	1. Mathematics Coordinators	47
	2. Principals	48
	3. Teachers	56
Appendix D.	District Policy Study: Daily Logs and Weekly Questionnaire (1982-83)	61
Appendix E.	District Policy Study: Teacher Interviews (Fall 1982, Spring 1983, Spring 1985)	69
Appendix F.	District Policy Study: Teacher Questionnaires (1982-85)	91
	1. General Topics	93
	2. Subtopic Experience and Belief	94
	3. Topic Coverage, Intentions, and Experience	96
Appendix G.	District Policy Study: Curriculum Coordinator Interview (1982-85)	105
Appendix H.	District Policy Study: Principal Interview (Spring 1983)	117

Appendix A

Content Decisions: Teacher Interview (Spring 1979)

May 9, 1979

Michigan State University
Institute for Research on Teaching
Teacher Survey of Mathematics Content
Instructions to Interviewers

General Instructions

The primary purpose of the interview is to obtain as complete a statement about the content of elementary school mathematics as seen by the respondent as is possible. Of particular interest are 1) the level of detail (fineness of distinction) made when describing content, 2) content which would not be well described by the current version of the taxonomy, 3) the meaning teachers give to certain key terms, 4) relationships among topics. A secondary interest is to become more knowledgeable about several external factors which might influence teachers' decisions about what to teach. Finally, there are a host of questions about which we hope to become more knowledgeable through these interviews, but which are not given explicit attention in the interview schedule, e.g., the content/strategy distinction, reasons other than external factors that teachers give for making decisions about the content of instruction. In pursuing these multiple ends the interviewer is given some latitude:

1.) All questions in the interview schedule are to be asked and in the order given;

2.) Variation in the wording of these questions is allowed;

3.) All questions are to be asked in reference to the subject's current teaching assignment. When the assignment involves multiple grades, greatest attention should be given to the grade level closest to fourth grade;

4.) From section III on, all statements about content should be probed until the subject can think of nothing further to say;

5.) The interviewer must decide on a case by case basis whether or not to pursue areas other than content and which are not explicit in the interview schedule. The primary concern in these decisions should be centrality to the objectives of the Content Determinants Group and interview time. The following are some general guidelines:

a.) the impact of external factors should not be pursued, although if a subject reports not making decisions consistent with an "external factor", the subject should be asked why:

b.) subjects should not be asked to describe content for grade levels they are not currently teaching;

c.) time permitting, statements relevant to the content/strategy distinction should be pursued;

The interviewer may wish to make note of interesting points which might be pursu at the end of the interview given sufficient time.

At the start of the interview the following should be done:

1.) Have the subject complete the statement of informed consent, complete with social security number and address;

2.) The subject should be told that the session will be audiotaped. Since a transcript of the audio tape is the basic data, the interview should be terminated immediately if the subject objects to the session being taped.

The interview is to last approximately two hours or less. If at the end of two hours the subject is still providing useful data, a second interview should be scheduled, unless the interview can be completed in 15 minutes.

Interview Schedule

I am primarily interested in understanding the content of mathematics which you teach to children in your classroom. One way of thinking about this is to answer the question, "What would a youngster have learned if instruction was 100% effective for him?" While I am interested in the full school year, I realize that a complete description for that period of time might be difficult to provide. Thus, I will try to stimulate your thinking by asking questions.

Let me first ask a few questions to put your description of content into perspective.

This section of the interview (prior to III) is not designed to elicit detailed statements about the content of instruction. With that in mind the following rules apply:

1.) Probe for the meaning the teacher gives to any key terms which you do not find self-explanatory, e.g.,

concepts	basic number facts
understanding	basic skills
skill	problem solving
applications	properties
place value	relationships
measurement	transfer
geometry	_____ concept
estimate	concept of _____
basics	enrichment program
processes	enrichment activities
story problems	
comprehension	

2.) Probe no further on content in this section. Instead list topics or areas of content that are volunteered by the subject so that these may be pursued in later sections of the interview.

3.) If "understanding of _____" is mentioned by the subject, it should be probed in depth.

I. Background

A. Teacher background

1.) How many years have you taught in elementary school?

2.) At what grade levels have you taught?

3.) What grade levels do you currently teach?

B. When is mathematics taught?

1.) Are regular time periods set aside for math instruction each day? When do these time periods begin? How long do they last?

2.) Are there other times that students might be studying mathematics?

II. Teacher's reasons for teaching mathematics

A. What in your own opinion are the most important reasons for teaching mathematics in elementary school:

Probe: You say that mathematics should be taught because _____. How is the importance you put on this reason reflected in your own teaching? Do you try to get children to understand the reasons you have just given?

This should not be probed too hard at this point. The purpose of putting the why question here is to attempt to create a context for what follows that will generate responses that may push our boundaries for what constitutes content. After learning what is taught we may decide to ask teachers to relate that content to their answers here.

III. Teacher's descriptions of math content

A. Skip the following transition and ask the next question if the teacher has not mentioned any math content up to this point.

Transition: "In our conversation so far you have mentioned a number of things in mathematics that you hope students learn, for example - (interviewer gives a few examples from his notes). I would like to get a complete list of the things you hope students learn in _____ grade mathematics. If you think that it would be easiest, you could start with some of the topics that you have already mentioned. My question is -

Question: What do you hope students will learn in _____ grade mathematics?"

1.) Attempt to get as complete and detailed a response to this general question as is possible. The following two probes should be used:

a.) Tell me all the different ways that _____ comes up in the content that you teach.

The probe should be used with the four main arithmetic operations and selectively with other general content areas about which you would like the subject to say more, e.g., fractions.

b.) What are some other things that you hope students will learn?

2.) Keep a list of all areas of content that have been satisfactorily described (this list will be given orally to the subject just prior to the external factors section of the interview).

3.) Probe when any of the key words listed earlier are used by the subject;

4.) Probe "understanding of _____" whenever it is volunteered. If "understanding of _____" is not volunteered but "understanding" is mentioned, make a note, since questioning at the end of this section is conditioned on past use of "understanding".

5.) Probe all areas of content mentioned regardless of whether it is content taught;

6.) Be particularly sensitive to any indications of relationships among topics:

a.) When a teacher has indicated a relationship among topics or a structure for topics, the teacher should be asked for the logic behind that relationship or structure only once, i.e., the interviewer is to accept the teacher's first response to a probe for the underlying logic to any indicated structure or relationship.

b.) When probing the logic behind a relationship the following should be used, "How would you explain why a student would have to _____?"

c.) Be alert for indications of topics which are crossed or nested within each other and look for indications of pre-requisites. Probe the teacher on the following terms or phrases:

common thread	instructional sequence
difficulty	concrete to abstract
easy	basic
reach a certain point	cuts across
up through	links
take them further	tied
transfer to _____	coupled
inverse operations	

B. What other things could be taught in _____ grade mathematics? (ask this question once)

The following are a list of optional probes that may be used to encourage teachers to expand their remarks about content:

1.) How do you deal with this area in your teaching?

2.) How do (would) the children proceed through this area? How is it (would it be) sequenced?

3.) What kinds of assignments do (would) the children do and how do (would) these assignments differ in content?

4.) What do (would) you hope the students learned?

5.) What is it that students find difficult about this area?

6.) If you had less time to teach the area, what would you omit?

7.) If you had more time to teach this area, what would you add to increase the depth of coverage?

8.) Can you tell me what you mean by that (their response)?

9.) What kinds of errors do students typically make on _____?

10.) Can you give me an example of a problem that illustrates _____? Number the examples given and state number for for tape

C. Bring up any topics mentioned prior to III and that were not adequately described in III.

D. Attempt to summarize content that the teacher has mentioned up to this point and ask -

"Are there any other areas of content of _____ grade mathematics that come to mind?"

E. If "understanding of _____" has not yet been sufficiently explored in the interview,

1.) but "understanding" has been mentioned one or more times by the teacher without reference to a particular area of content, say

You mentioned "understanding" earlier in the interview. How does understanding come up when you are teaching a particular area like fractions?

If the subject does not respond the question should be repeated. If the subject still does not respond, the question should be dropped.

or 2.) If "understanding" has not been mentioned by the teacher, say -

Earlier in the interview, you mentioned some things you hope students learn having to do with (fractions). I'd like to go back there for a minute to ask a further question. How do you know when a student understands fractions?

F. External Factors

The primary purpose for asking the six sets of questions on external factors is to elicit more descriptions of content. At the same time, however, responses may provide further understanding of the external factors. With this secondary purpose in mind, the following should serve as guidelines to the interviewer:

1.) Do not ask questions about the impact of external factors;

2.) Do not ask questions designed to identify additional external factors;

3.) If the subject mentions something that sounds as though it might be an additional external factor, it is up to the interviewer to decide whether to probe. If the decision is in favor of probing, the following should be used to determine whether or not the teacher thinks of _____ as an external factor:

"Is _____ something you might think about when trying to decide what to teach?"

4.) The interviewer must decide whether or not to find out how external factors are communicated. Communication is of greatest interest for the three personal factors, i.e., teachers, parents, school officials. If communication is to be pursued, the following questions may be helpful:

"Who initiated the communication?"
"Have there been other similar incidents?"

5.) It is up to the interviewer to decide whether or not to press the subject on how knowledgeable they are about the content of tests and objectives.

1.) What advice or suggestions have you received from parents about what you teach in mathematics?

i) what mathematics have parents asked you to stress in your instruction?

ii) what mathematics have parents asked you to delete from your instruction

iii) are there any aspects of mathematics about which you feel strongly but about which parents are apathetic?

2.) What suggestions have you received from other teachers about what should be covered in mathematics?

i) do they place higher priority on some mathematics than you do?

ii) is there mathematics which you teach that they would not?

3.) Has anyone on the school district staff given you advice or direction on what to cover in mathematics?

i) have you been advised to provide more coverage of certain areas of mathematics than you do now?

ii) is there mathematics which you teach that they have suggested might be omitted?

4.) What materials are you using this year?

i) what mathematics is included that you don't teach?

ii) is there mathematics not covered which you wish were?

iii) do you re-order the presentation of material?

iv) would good students learn the same mathematics if they worked by themselves on the materials with hardly any help from you?

5.) Does your district have a set of objectives for mathematics at your grade level?

i) which objectives do you wish were deleted?

ii) what objectives would you like to see added?

iii) are you expected to teach the objectives in a particular order? If yes, what changes, if any, would you like to see made in the sequencing of objectives?

iv) are there objectives that you would like to see made more detailed and explicit?

6.) What tests in your school are expected or required to be given?

i) what do you want your students to learn that is not reflected on these tests?

ii) is there mathematics tested which you do not teach?

IV. Teacher's structures of mathematics

A. If you had to divide (up) all the mathematics that you teach into just a few categories, which categories would you choose?

1.) How would you subdivide the content within each of these categories?

2.) Can you think of another set of categories that might be used? If yes, repeat (1) above and follow with (2) again until the respondent is done.

B. Do you see any common threads that run through many of the topics you teach? For each thread identified, ask the respondent to describe and indicate which topics.

Appendix B

Policy-Capturing Study Questionnaires (1978)

1. Curriculum Decision Making
2. Background
3. Current School

Your principal in Grenfall takes a particular interest in mathematics. Before school begins, Principal Cohen asks you to the office to discuss curriculum matters. In the course of this discussion, you find that Cohen feels you should teach five topics you have not previously taught in fourth grade and at the same time suggests that it is not important to teach fourth graders five topics you have been used to teaching.

Shortly after your arrival in Grenfall, you inspect the set of objectives which the central administration has directed all the teachers to follow. You note that the objectives deal with five topics which you have not in the past taught to fourth graders. They do not include material on five topics which you have usually taught in fourth grade. The topics in each case are the same as those singled out in the discussion with the principal.

A. Assume that, among school systems in general, the five "new" topics are usually covered in fourth grade but, in your former school, they were covered in fifth grade. In light of the description on the opposite page, would you teach the five new topics?

(Col. 9)
1 Virtually certain
2 Fairly certain
3 More inclined to
4 Uncertain
5 More inclined not to
6 Fairly certain not
7 Virtually certain not

B. Further assume that you judge the five "old" topics to be of equal importance to the five "new" commonly covered topics. Given your response to question A, would you continue to teach the five "old" topics?

(Col. 10)
1 Virtually certain
2 Fairly certain
3 More inclined to
4 Uncertain
5 More inclined not to
6 Fairly certain not
7 Virtually certain not

C. Now assume that, among school systems in general, although a few fourth grade teachers teach the five "new" topics, these "new" topics are not commonly taught at the elementary school level. In light of the description on the opposite page, would you teach the five "new" topics?

(Col. 11)
1 Virtually certain
2 Fairly certain
3 More inclined to
4 Uncertain
5 More inclined not to
6 Fairly certain not
7 Virtually certain not

D. Further assume that you judge the five "old" topics to be of equal importance to the five not commonly covered "new" topics. Given your response to question C, would you continue to teach the five "old" topics?

(Col. 12)
1 Virtually certain
2 Fairly certain
3 More inclined to
4 Uncertain
5 More inclined not to
6 Fairly certain not
7 Virtually certain not

These questions were repeated for each of the following vignettes.

In which the central administration has published, for fourth grade mathematics, a set of objectives which all teachers have been directed to follow. At the end of the year, a standardized test in mathematics is administered in each grade. The test results for each school are published, by grade level, in the local newspaper.

Shortly after your arrival, you study the set of objectives and the test which is used. You realize that these materials do not deal with five topics you have been accustomed to teaching in fourth grade. You also note that they do include material on five topics you have never taught to fourth graders.

Also imagine that the teachers in your school express a particular interest in mathematics at staff meetings and in conversations in the teachers' room. During these discussions you find that the fifth and sixth grade teachers feel you should teach five topics you have not taught to fourth graders in the past. They also question the value for fourth graders of five topics you have been used to teaching. The topics mentioned in each case are the same as those you noted in your examination of the test and the objectives.

During your orientation in Alpen Creek you are given a list of fourth grade mathematics objectives, which are published by the central administration and which teachers have been directed to follow. You also receive a copy of the mathematics textbook which is supplied for your class. You examine the list of objectives and the book, finding that each includes material on five topics you have never covered in fourth grade, while neither includes material related to five topics you have been accustomed to teaching in fourth grade.

In Stanway, the principal in your school, as well as the parents of students in your classroom, take a particular interest in mathematics. One day early in the school year, Principal Morgan asks you to the office to discuss curriculum matters. The parents, for their part, raise many questions at the fall open house. In pursuing these discussions, you find that both Morgan and the parents think you should teach five topics you have not previously covered in fourth grade and at the same time question the value of teaching fourth graders five topics you have been accustomed to covering.

Upon your arrival in Damon you find that the parents, principal, and teachers in your school take a particular interest in mathematics. The parents of students in your classroom raise many questions at the first open house. Principal Miller asks you to the office to discuss curriculum matters. The fifth and sixth grade teachers express their concerns about the mathematics curriculum, both at staff meetings, and informally, in the faculty lounge. In pursuing these discussions, you find that these parties think you should teach five topics which you have never taught to fourth graders. At the same time, they question the value, for fourth graders, of teaching five topics you have usually covered.

In this system, a test in mathematics is administered in each grade level at the end of the year. The test data for each school are published by grade level in the local newspaper. During the first weeks of school, you examine the fourth grade test. You find that it covers five topics which you have not previously taught to fourth graders while it omits five topics you have been used to teaching at this grade level. The topics in each case are the same as those singled out in the course of the above discussions.

Imagine that the central administration in Potapsco has published, for fourth grade mathematics, a list of instructional objectives which all teachers have been directed to follow.

Shortly after your arrival, you study the list of objectives. You find that the list includes five topics which you have not previously taught to fourth graders, and omits five topics which you have been used to teaching in fourth grade.

Also imagine that the parents of the students in your classroom take a particular interest in mathematics. The parents raise many questions at the first open house. Pursuing these discussions, you find that the parents feel you should teach five topics you have never covered in fourth grade, and see little value in teaching fourth graders five topics you have usually covered. The topics in each case are the same as those singled out by your examination of the objectives.

The central administration in Raven Fork has published, for fourth grade mathematics, a set of objectives which all teachers have been directed to follow. At the end of the year, a standardized test in mathematics is administered in each grade. The test results for each school are published, by grade level, in the local newspaper.

Shortly after your arrival in Raven Fork, you study the set of objectives. You inspect the fourth grade test. You find that both objectives and test include five topics which you have not previously taught to fourth graders, and omit five topics which you have been used to teaching in fourth grade

The parents and teachers in your new school at Belmar are particularly interested in mathematics. At the fall open house, the parents of students in your classroom raise many questions about this subject. The fifth and sixth grade teachers also express their concerns about mathematics early in the year, both at staff meetings and informally in the lunchroom. In pursuing these discussions, you realize that both parents and teachers advocate inclusion of five topics which you have never taught in fourth grade. You also find that they see little value in teaching fourth graders five topics which you have usually covered.

The central administration in this school has published a set of objectives in fourth grade mathematics, which all teachers have been directed to follow. At the beginning of school, you inspect the objectives. You also study the textbook supplied for your use. You note that both objectives and textbook deal with five topics you have not in the past taught in fourth grade. In addition, each of these two sources omit five topics which you have usually covered in fourth grade. The topics in each case are the same as those singled out in the above discussions.

In Elliotsburg, the principal takes a particular interest in mathematics. Early in the year Principal Murray asks you to the office to discuss the curriculum. During this discussion you find that Murray feels you should teach five topics you have not previously covered in fourth grade and suggests that it is not important to teach fourth graders five topics you have been used to teaching.

Also imagine that the central administration has published for fourth grade mathematics a set of objectives which all teachers have been directed to follow. At the end of the year, a standardized test in mathematics is administered in each grade. The test results for each school are published, by grade level, in the local newspaper.

Shortly after your arrival in Elliotsburg you examine the list of objectives and the test. You also study the textbooks provided for your class. You find that, in all three cases, five topics you have never taught to fourth graders are included. You also realize that these materials do not cover five topics you have ordinarily taught in fourth grade. The topics in each case are the same as those singled out in your discussion with the principal.

During your orientation in Eltham you examine the mathematics textbooks which are provided for use in your classroom. You find that the textbooks include five topics you have not previously taught to fourth graders and omit five topics that you have been used to teaching in fourth grade.

Imagine that the parents of students in your classroom are particularly interested in mathematics. The parents raise many questions at the fall open house. In the course of these discussions, you find that the parents think you should teach five topics you have not previously taught in fourth grade and at the same time question the value of teaching fourth graders five topics you have been used to teaching. The topics in each case are the same as those singled out by your examination of the textbooks.

Shortly after your arrival in Artena you look at the textbooks supplied for your class. Early in the school year you also inspect the set of instructional objectives which the central administration has published and all teachers have been directed to follow. In addition, you carefully read the fourth grade standardized test in mathematics administered at the end of the year. The results of this test are published by school and grade level in the local newspaper. You notice that in all three cases the materials cover five topics which you have never taught to fourth graders and do not deal with five topics which you have ordinarily taught in fourth grade.

During the early weeks of school your colleagues in fifth and sixth grade show a particular interest in mathematics, expressing their concerns both at staff meetings and informally in the lunchroom and teachers' lounge. In the course of these discussions, you find these teachers think you should teach five topics you have not previously taught in fourth grade and at the same time question the value of teaching fourth graders five topics you have been used to teaching. The topics in each case are the same as those singled out by your examination of the materials.

Shortly after your arrival in Canwood, you look at the textbooks furnished for your use. You also carefully read the fourth grade standardized test in mathematics, which is administered at the end of the year. The results of this test and tests for other grades are published, by school and grade level, in the local newspaper. You notice that in both cases the materials cover five topics which you have never taught to fourth graders and do not deal with five topics which you have been accustomed to teaching in fourth grade.

The principal in your new school and the parents of students in your classroom are particularly interested in mathematics. One day early in the school year, Principal Chan asks you to the office to discuss curriculum matters. The parents, for their part, express their concerns at the first open house. In pursuing these discussions, you find that both principal and parents feel you should teach five topics you have not previously taught in fourth grade and at the same time suggest that it is not important to teach fourth graders five topics you have been used to teaching. The topics in each case are the same as those singled out by your examination of materials.

Shortly after your arrival in Withington you look at the textbooks supplied to your class. You notice that the textbooks cover five topics which you have never taught to fourth graders and do not deal with five topics which you have ordinarily taught in fourth grade.

One day early in the school year your principal asks you to the office to discuss curriculum matters. In the course of the discussion you find Principal Lewis feels you should teach five topics you have not previously taught in fourth grade and at the same time suggests that it is not important to teach fourth graders five topics you have been used to teaching. The topics in each case are the same as those singled out by your examination of the textbooks.

In Claremore, the principal of your school and the parents of students in your classroom are particularly interested in mathematics. One day, early in the school year, Principal Fiore asks you to the office to discuss curriculum matters. The parents, for their part, raise many questions at the first open house. In pursuing these discussions, you find that both parents and principal think you should teach five topics you have not previously covered in fourth grade and, at the same time, question the value of teaching fourth graders five topics you have been accustomed to teaching.

In this same school a mathematics textbook is supplied for your use. In addition, the Claremore central administration has published, for fourth grade mathematics, a list of objectives which all teachers have been directed to follow. Soon after school begins, you carefully read the set of objectives and the textbooks and find they include five topics you have never covered in fourth grade and omit five topics which you have been used to teaching fourth graders. The topics in each case are the same as those singled out in the course of the above discussions.

In the school system at Dunwich, the central administration has published, for fourth grade mathematics, a set of objectives which all teachers have been directed to follow. Shortly after your arrival in this district, you inspect the list of objectives. You find that they include five topics that you have not previously taught to fourth graders and omit five topics that you have usually covered in fourth grade.

The principal in your new school, the parents of students in your classroom, as well as the teachers at the school, take a particular interest in mathematics. One day early in the school year Principal Katz asks you to the office to discuss curriculum matters. At the fall open house the parents raise many questions while at staff meetings and informally in the teachers' lounge the fifth and sixth grade teachers express their concerns about mathematics. In pursuing these discussions, you find that all these parties think you should teach five topics you have not previously taught in fourth grade and at the same time question the value of teaching fourth graders five topics you have been used to teaching. The topics in each case are the same as those singled out by your examination of the objectives.

In Delburne the teachers and principal at your school are particularly interested in mathematics. One day, early in the school year, Principal Jackson asks you to the office to discuss curriculum matters. At about the same time, the fifth and sixth grade teachers express their concerns about mathematics both at staff meetings and informally in the lunchroom and teachers' lounge. In the course of these discussions, you find that both the principal and the teachers think you should teach five topics you have not, in the past, taught to fourth graders. You also realize that principal and teachers question the value of teaching fourth graders five topics which you have been used to teaching.

At the end of the year in the Delburne school district, a standardized test in mathematics is administered at each grade level. The test results for each school are published, by grade level, in the local newspaper. Shortly after your arrival in this district, you obtain a copy of the fourth grade test as well as a set of mathematics textbooks which are supplied for your use. In studying these materials, you find that both test and textbook include five topics that you have never taught in fourth grade. They also omit five topics that you have usually covered at this grade level. The topics in each case are the same as those singled out in the discussions with principal and teachers.

40

Duplicate Columns 1-4

Columns 5-6 | 1 | 6 |

Columns 7-8 | 5 | 5 |

The parents of students in your classroom and the teachers at your new school take a particular interest in mathematics. The parents, for their part, raise many questions at the first open house. During the first month of school, the fifth and sixth grade teachers express their concerns about the mathematics curriculum in staff meetings and informally in the staff lunchroom. In the course of these discussions, you find that both the parents and teachers think you should teach five topics in mathematics which you have never taught to fourth graders. At the same time they question the value of teaching fourth graders five topics you have usually covered.

Duplicate Columns 1-4

Columns 5-6 | 1 | 7 |

Columns 7-8 | 4 | 7 |

Duplicate Columns 1-4

Columns 5-6 [3][7]

Columns 7-8 [6][7]

EMPHASIS

The teachers and principal in your new school at Penrov are particularly interested in mathematics. During the early weeks of school, concern about the mathematics curriculum is shown by your colleagues in fifth and sixth grade, both at staff meetings and informally in the lunchroom and teachers' lounge. Also, during these weeks Principal Green asks you to the office to discuss curriculum matters. During these discussions, you interpret both the teachers and principal as calling for you to give more emphasis to five topics you have usually covered lightly and less emphasis to five other topics that you have ordinarily stressed.

A. Would you put more emphasis on the five topics you have usually covered lightly?

Column 9

1 Virtually certain
2 Fairly certain
3 More inclined to
4 Uncertain
5 More inclined not to
6 Fairly certain not
7 Virtually certain not

B. Would you continue to put as much stress on the other five topics as you have before?

17

Column 10

1 Virtually certain
2 Fairly certain
3 More inclined to
4 Uncertain
5 More inclined not to
6 Fairly certain not
7 Virtually certain not

Duplicate Columns 1-4

Columns 5-6 [3][6]

Columns 7-8 [6][6]

EMPHASIS

In the Olcott school district at the end of the year, a standardized test in mathematics is administered in each grade. The test results for each school are published, by grade level, in the local newspaper.

Shortly after your arrival, you examine the fourth grade test. You also look at the mathematics textbooks provided for your use. You interpret both the test and textbooks as calling for you to give more emphasis to five topics you have usually covered lightly and less emphasis to five other topics that you have ordinarily stressed.

A. Would you put more emphasis on the five topics you have usually covered lightly?

Column 9

1 Virtually certain
2 Fairly certain
3 More inclined to
4 Uncertain
5 More inclined not to
6 Fairly certain not
7 Virtually certain not

B. Would you continue to put as much stress on the other five topics as you have before?

Column 10

1 Virtually certain
2 Fairly certain
3 More inclined to
4 Uncertain
5 More inclined not to
6 Fairly certain not
7 Virtually certain not

BACKGROUND QUESTIONS

1. How many years have you taught elementary school?

(Cols. 7-8) ☐☐ years

2. How many years have you taught fourth grade (or a multi-age class which includes fourth graders)?

(Cols. 9-10) ☐☐ years

3. In how many different school systems have you taught third, fourth, or fifth grade mathematics?

(Cols. 11-12) ☐☐ school systems

4. How old are you?

(Cols. 13-14) ☐☐ years

5. Are you a male or female?

(Col. 15)
1 Male
2 Female

6. What is the highest level of education that you have obtained?

(Col. 16)
1 Bachelors degree
2 Masters degree
3 Courses beyond the masters but no doctoral degree
4 Doctoral degree

42

7. How many different courses have you taken that focused on methods of teaching mathematics (both undergraduate and graduate)?

(Col. 17)
0 No such courses
1 One course
2 Two courses
3 Three courses
4 Four or more courses

8. How many different mathematics courses have you taken (both undergraduate and graduate), not including educational methods courses?

(Col. 18)
0 No such courses
1 One course
2 Two courses
3 Three courses
4 Four or more courses

9. About how many children in your present school are in the fourth grade (include all fourth graders in your school, not just those in your class)?

(Cols. 19-21) ☐☐☐ children

10. How many teachers in your school teach mathematics to fourth graders?

(Cols. 22-23) ☐☐ teachers

11. Do you currently teach mathematics to fourth graders?

(Col. 24)
1 Yes
2 No

(Skip cols. 25-28)

12. What is the name of your school? _____

13. In what city is your school located? _____
(Note: Schools and cities will not be identified when the results of the study are reported.)

14. Please rank the following school subjects according to the degree to which you enjoy teaching them to your current class. Place a "1" next to the subject you most enjoy teaching, a "2" next to your second choice, and so on.

(Col. 29) ☐ Language arts (including reading)
(Col. 30) ☐ Mathematics
(Col. 31) ☐ Social Studies
(Col. 32) ☐ Science

15. Which best describes the children in your school?

(Col. 33)
1 More than half come from urban neighborhoods
2 More than half come from suburban neighborhoods
3 More than half come from small town or rural neighborhoods
4 None of the above (please describe: _____)

16. Which best describes the educational level of the parents of children in your school?

(Col. 34)
1 More than half are college graduates
2 More than half are not college graduates

17. Which best describes the income level of the parents of children in your school?

(Col. 35)
1 More than half are middle to high income
2 More than half are low income

QUESTIONS ON YOUR CURRENT SCHOOL

Textbook

Did you use a textbook last year (1976-77) for fourth grade mathematics?

(Col. 7)
1 Yes (please specify publisher of each text _____
2 No _____)

(Skip Cols. 8-9)

How much responsibility did you have for the choice of the textbooks used?

1 No responsibility
2 A little responsibility
(Col. 10) 3 Considerable responsibility although I did not make the choice by myself
4 I was completely responsible for the choice
7 I used no textbook

Did you agree or disagree with the text as far as topic coverage was concerned (coverage here refers to presence or absence of topics, not to the way in which they were presented)?

43
1 I completely agreed with the topic coverage
(Col. 11) 2 I disagreed on a few topics
3 I disagreed on many topics
7 I used no textbook

Objectives

Last year (1976-77), did you have a set of objectives in mathematics that was to be used by all fourth grade teachers in your district?

1 Yes
(Col. 12) 2 No
6 Don't know

How much responsibility did you have for the choice of these objectives?

1 No responsibility
(Col. 13) 2 A little responsibility
3 Considerable responsibility
7 We have no such set of objectives

Did you agree or disagree with these objectives as far as topic coverage in fourth grade mathematics was concerned?

1 I completely agreed with the topic coverage

2 I disagreed on a few topics

(Col. 14) 3 I disagreed on many topics

6 I am too unfamiliar with the objectives to answer

7 We had no such set of objectives

Examinations

Please list those examinations partly or wholly devoted to mathematics which were given to all fourth graders in your district last year, 1976-77 (give whatever identifying information you remember)

(Skip Cols. 15-16)

_____

_____

_____

Last year were the results of any of these district-wide examinations published, by school and grade level, in a local newspaper?

1 Yes

(Col. 17) 2 No

6 Don't know

How much responsibility did you have for the choice of these district-wide exam(s) (excluding the MEAP Michigan Assessment Test)?

1 No responsibility

2 A little responsibility

(Col. 18) 3 Considerable responsibility

7 The MEAP was the only district-wide exam we used in fourth grade last year

Did you agree or disagree with these district-wide exam(s) as far as topic coverage in fourth grade mathematics was concerned?

1 I completely agreed with the topic coverage

(Col. 19) 2 I disagreed on a few topics

3 I disagreed on many topics

6 I am too unfamiliar with the content of the exam(s) to answer

Principal

During 1976-77, how much interest did your principal take in the topics covered in fourth grade mathematics?

1 None

(Col. 20) 2 Very little

3 Some

4 A great deal

Did you agree or disagree with the principal as far as topic coverage in fourth grade mathematics was concerned?

1 I completely agreed with the principal on topic coverage

(Col. 21) 2 I disagreed on a few topics

3 I disagreed on many topics

6 I am too unfamiliar with the principal's opinion to answer

Teachers

During 1976-77, how much interest did the fifth and sixth grade teachers in your school take in the topics covered in fourth grade mathematics?

1 None

(Col. 22) 2 Very little

3 Some

4 A great deal

Did you agree or disagree with those fifth and sixth grade teachers who expressed an opinion as far as topic coverage in fourth grade mathematics was concerned.

1 I completely agreed with the fifth and sixth grade teachers on topic coverage

(Col. 23) 2 I disagreed on a few topics

3 I disagreed on many topics

6 I am too unfamiliar with the opinions of the fifth and sixth grade teachers to answer

7 The fifth and sixth grade teachers didn't agree among themselves

Parents

During 1976-77, how much interest did the parents of students in your classroom take in the topics covered in fourth grade mathematics?

1 None
(Col. 24) 2 Very little
3 Some
4 A great deal

Did you agree or disagree with those parents who expressed an opinion as far as topic coverage in fourth grade mathematics was concerned?

1 I completely agreed with the parents on topic coverage
2 I disagreed on a few topics
(Col. 25) 3 I disagreed on many topics
6 I am too unfamiliar with the parents' opinions to answer
7 The parents didn't agree among themselves

One Last Question

Earlier, when reading the descriptions of schools, you were asked to imagine that you were just starting to teach in a new school. Would you have responded to these descriptions differently if you had imagined that you were beginning your third year in the school?

1 Yes, my responses would have been very different.
(Col. 26) 2 Yes, my responses would have been slightly different.
3 No, my responses would have been just the same.

Appendix C

Five-State Survey of School District Policy Questionnaires

1. Mathematics Coordinators
2. Principals
3. Teachers

Institute for Research on Teaching

Michiga

DISTRICT POLICIES AND PRACTICES IN ELEMENTARY SCHOOL MATHEMATICS:

Questionnaire for Mathematics Coordinators/Curriculum Directors

INSTRUCTIONS

This questionnaire is designed to take a minimum of your time.

- All answers are to be provided on the questionnaire itself.
- No long answers are required. Nearly all questions are multiple choice. The rest are short answer.
- There are whole sections that can be skipped if they do not apply to your district.
- We do not want you to look up any answers. Answer each question on the basis of what you already know. Where appropriate, check "Don't know."

Please circle the numbers or check (✓) the spaces corresponding to your responses and enclose the completed questionnaire in the postage paid envelope. If you skip a question (other than when directed to do so), we encourage you to jot down as briefly as possible your reason for skipping. If possible, please return the form within the next week.

INSTRUCTIONAL OBJECTIVES

1. Has your district written a curriculum guide, scope and sequence chart, or some other document that provides a list of instructional objectives for elementary school mathematics? (Circle the number opposite your answer.)

2 Yes

1 No → Are individual buildings encouraged to develop their own objectives?

1 No → Please SKIP to question 11.

2 Yes → a) Approximately how many of the district's elementary schools have developed objectives in mathematics?

1 Virtually none

2 Some

3 Most

4 Virtually all

b) Now please SKIP to question 11.

2. Which one of the following best characterizes the intent of the district's math objectives? (Circle only one.)

1 To specify minimum competencies in elementary school mathematics.

2 To provide a comprehensive list of desired learning outcomes in elementary school mathematics.

3. To what extent do district objectives emphasize the following? (Circle your answers.)

	Don't Know	Little or No Emphasis	Some Emphasis	Major Emphasis	
a) Conceptual understanding (understanding the "whys" of math such as why 3 x 4 = 12, etc.)	0	1	2	3	(13)
b) Computational skills (knowing "how to" perform mathematical operations such as multiplying 36 x 84, reading a thermometer, etc.)	0	1	2	3	(14)
c) Story problems and other forms of applications	0	1	2	3	(15)

4. Are students supposed to master all K-3 mathematics objectives before working on any fourth-grade objectives? (Circle one.)

(16) 1 No
2 Yes
3 Objectives not identified by grade level

5. Are there separate tests for each objective?

(17) 1 No
2 Yes

6. Does the district require that records be maintained on the objectives each student has mastered?

(18) 1 No
2 Yes → How often must these records be updated?
(19) 1 Once a year
2 More often than once a year

7. Does the district provide a list of assignments that identifies textbook or workbook lessons for each objective?

(20) 1 No
2 Yes

8. In your opinion, have district objectives had any of the following consequences for the elementary school mathematics curriculum in your district? (Circle your answers.)

	Definitely Yes	Probably Yes	Probably Not	Definitely Not	
a) More time devoted to topics for which there are objectives	1	2	3	4	(
b) Less time devoted to topics not included in the district objectives	1	2	3	4	(
c) Greater uniformity in what is taught across all schools in the district	1	2	3	4	(
d) Decrease in teacher's opportunity to present advanced topics to gifted students	1	2	3	4	(

9. For each of the following statements, indicate your degree of agreement by circling the appropriate number.

	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree	
a) Teachers were adequately involved in the development of the district elementary school mathematics objectives.	1	2	3	4	5	(25)
b) The opinions of persons with expertise in mathematics education were adequately taken into account in the development of these objectives.	1	2	3	4	5	(26)
c) These objectives have had advocates with the kind of personality needed to get them accepted by teachers.	1	2	3	4	5	(27)
d) These objectives adequately cover the topics that teachers in your district think ought to be taught.	1	2	3	4	5	(28)
e) These objectives were written to match what teachers were already doing.	1	2	3	4	5	(29)
f) Parents/community leaders are pleased with these objectives.	1	2	3	4	5	(30)
g) District teachers have a legal obligation to follow these objectives.	1	2	3	4	5	(31)
h) Teachers who diligently follow these objectives are likely to receive some recognition or reward for their efforts.	1	2	3	4	5	(32)
i) Teachers who ignore these objectives are likely to be penalized.	1	2	3	4	5	(33)
j) District teachers have been kept well-informed about the elementary school mathematics objectives.	1	2	3	4	5	(34)

48

10. Please indicate which of the following statements provide accurate descriptions of state involvement in the development of district objectives. (Circle your answers.)

	Yes	No	Don't Know	
The state required the district to develop mathematics objectives for elementary school students.	2	1	8	(35)
The state provided consultants or other forms of technical assistance at the time the district's objectives were written.	2	1	8	(36)
The development of district objectives was funded (all or in part) by a grant from the state.	2	1	8	(37)
Most or all of the state's mathematics objectives were restated in district objectives.	2	1	8	(38)

TESTING

11. Apart from state MEAP tests, are any district-wide achievement tests which include mathematics administered once or twice a year in the elementary grades?

(39) 1 No ⟶ SKIP to question 12.

2 Yes ⟶ What kinds? (Circle one response.)

1 Only locally-developed tests

(40) 2 Only commercially published, standardized tests (e.g., Stanford Achievement Test, Iowa Test of Basic Skills)

3 Both locally-developed and commercially published tests ⟶ a. Which of these types do you consider more important to your district?

1 Locally-developed

(41) 2 Commercially published

b. NOW, IN ANSWERING QUESTIONS ABOUT DISTRICT TESTS, CONSIDER ONLY THE TEST YOU FEEL IS MORE IMPORTANT.

12. At what grade levels are district-wide tests administered? (Check all that apply.)

___1 ___2 ___3 ___4 ___5 ___6 (42-47)

13. At what time of the year are these tests typically given?

(48) 1 Fall

2 Spring

3 Both fall and spring

14. Which of the following best describes the selection of students for testing? (Check more than one if selection varies across grades or schools.)

(49) ____ Some categories of children are excused from testing (e.g., mentally impaired).

(50) ____ A sample of children in the designated grades is given the tests.

(51) ____ All children in the designated grades are expected to take the tests.

15. Please indicate whether the following statements provide accurate descriptions of state involvement in the development/selection of district tests. (Circle your answers.)

	Yes	No	Don't Know	
The state provided technical assistance in developing or selecting these tests.	2	1	8	(52)
The state provided financial assistance for the development/selection of these tests.	2	1	8	(53)
The district-wide tests were designed/selected to cover topics in the state syllabus or curriculum guide.	2	1	8	(54)

16. In your opinion, do the district-wide tests provide a good measure of student performance on district mathematics objectives?

(55) 2 Yes

1 No

3 No district objectives

17. In your opinion, have state and district testing programs had any of the following consequences for the elementary school mathematics curriculum in your district? (If there is no district testing, answer the question for state testing only.)

	MEAP Testing				District Testing				
	Definitely Yes	Probably Yes	Probably Not	Definitely Not	Definitely Yes	Probably Yes	Probably Not	Definitely Not	
a) More time devoted to topics on the test	(56) 1	2	3	4	1	2	3	4	(60)
b) Less time devoted to topics not on the test	(57) 1	2	3	4	1	2	3	4	(61)
c) Press for more students to master certain topics on the test	(58) 1	2	3	4	1	2	3	4	(62)
d) More students receive remedial instruction	(59) 1	2	3	4	1	2	3	4	(63)

TEXTBOOKS

18. Which of the following best describes your district's practices in the selection of elementary school mathematics textbooks? (Circle only one.)

(64)

1 All elementary school teachers in the district are to use the same mathematics textbook series.

2 All elementary school teachers in the district at the same grade level are to use the same mathematics textbook series; different series are allowed across grade levels.

3 The district has a policy that each elementary school is to adopt a single textbook series but different schools may adopt different series. (If you circled this response, SKIP to question 22.)

4 None of the above. (If you circled this response, SKIP to question 22.)

19. How important were each of the following in the selection of the fourth-grade mathematics series currently used in your district? (Circle the appropriate number in each row.)

	Don't Know/Not Applicable	Little or No Importance	Some Importance	Major Importance	
a) Series was recommended for our district by state mathematics specialist.	0	1	2	3	(65)
b) Series was recommended by district mathematics specialist.	0	1	2	3	(66)
c) Series adequately covers topics on state (MEAP) tests.	0	1	2	3	(67)
d) Series adequately covers topics in district mathematics objectives.	0	1	2	3	(68)
e) Series emphasizes problem solving and applications.	0	1	2	3	(69)
f) Series emphasizes probability and statistics.	0	1	2	3	(70)
g) Series emphasizes metric measurement.	0	1	2	3	(71)

20. What is your best estimate of the proportion of elementary teachers in your district who make daily use of the adopted textbook as the primary source of guidance in deciding what to teach in mathematics?

(72)
1 Almost all
2 Most
3 About half
4 Some
5 Very few

21. In your opinion, has requiring teachers to use a particular mathematics textbook had any of the following consequences for the elementary school mathematics curriculum? (Circle the appropriate number in each row.)

	Definitely Yes	Probably Yes	Probably Not	Definitely Not	
a) More time devoted to topics emphasized in the text	1	2	3	4	(73)
b) Less time devoted to topics <u>not</u> in the text	1	2	3	4	(74)
c) More topics taught for which teachers have a limited academic background (e.g., geometry, metric measurement)	1	2	3	4	(75)
d) Greater uniformity <u>in the order</u> in which mathematics topics are taught	1	2	3	4	(76)
e) Improved between-grade continuity of the mathematics curriculum	1	2	3	4	(77)

Keypunch: Dup
columns 1-7
2(8)

STUDENTS

22. For each of the following practices, circle the number corresponding to the one column which best describes expectations for elementary schools in your district.

Practices	Elementary schools in this district are: Strongly urged or required to follow this practice	Encouraged to follow this practice	Left to themselves in deciding whether to follow this practice	Discouraged from following this practice	Strongly urged or required NOT to follow this practice	
a) Create small ability groups for mathematics instruction	1	2	3	4	5	(10)
b) At the beginning of the year, assign students to classrooms so that the classrooms differ in ability or achievement *	1	2	3	4	5	(11)
c) Provide individualized mathematics instruction	1	2	3	4	5	(12)
d) Retain some students in grade	1	2	3	4	5	

*e.g., tracking.

→ If you circled one of these three numbers, skip to question 24.

50

23. In your opinion, have district retention practices had any of the following consequences for the elementary school mathematics curriculum in your district? (Circle your answers.)

	Definitely Yes	Probably Yes	Probably Not	Definitely Not	
a) Teachers spend more time on mathematics.	1	2	3	4	(13)
b) There is greater uniformity in what is taught across all schools in the district.	1	2	3	4	(14)
c) Teachers have less opportunity to present advanced topics to gifted students.	1	2	3	4	(15)

Which of the following programs for elementary students in your district have a mathematics component?

	No Such Program	Program Does Not Include math	Some Emphasis on Math	Considerable Emphasis on Math	Don't Know	
a) Compensatory education (state or federal programs)	9	1	2	3	8	(16)
b) Bilingual education	9	1	2	3	8	(17)
c) Programs for handicapped children who have been mainstreamed most of the day	9	1	2	3	8	(18)
d) Programs for gifted children	9	1	2	3	8	(19)
e) Academic contests or competitions	9	1	2	3	8	(20)

TIME ALLOCATIONS

25. Are guidelines set by the district for the minimum amount of time to be spent on mathematics instruction in any of the grades K-6?

(21) 1 No ⟶ Please SKIP to question 29.

2 Yes

26. For each grade level, indicate the recommended minimum amount of time to be spent on mathematics instruction each week. If there are no guidelines for a particular grade, write 0 for that grade.

MINUTES PER WEEK

K	1	2	3	4	5	6
(22-24)	(25-27)	(28-30)	(31-33)	(34-36)	(37-39)	(40-42)

27. Are these time allocations the same as those recommended by the state?

(43) 1 No

2 Yes

3 No state guidelines

4 Don't know

28. What is your best estimate of the proportion of elementary school teachers who use the recommended minimum amount of time as a guide in planning mathematics instruction?

(44) 1 Almost all

2 Most

3 About half

4 Some

5 Very few

DISTRICT CONTENT EMPHASES

29. In your opinion, how much importance does your district as a whole place on the following topics in elementary school mathematics? (Circle your answers.)

	Don't Know	Little or No Importance	Some Importance	Major Importance	
a) Computer applications	0	1	2	3	(45)
b) Fractions	0	1	2	3	(46)
c) Decimals	0	1	2	3	(47)
d) Geometry	0	1	2	3	(48)
e) Hand held calculators	0	1	2	3	(49)
f) Metric measurement	0	1	2	3	(50)
g) Probability & statistics	0	1	2	3	(51)
h) Problem solving & applications	0	1	2	3	(52)
i) Computation with whole numbers	0	1	2	3	(53)
j) Conceptual understanding of the four basic operations (+, -, ×, ÷)	0	1	2	3	(54)
k) Estimation	0	1	2	3	(55)

MATHEMATICS SPECIALISTS

30. How many full-time equivalent persons are assigned to provide district-wide supervision/coordination of K-6 mathematics? (If persons have multiple responsibilities, include only the proportion of time allocated to K-6 mathematics.)

S1

Write your answer here. _____ FTE

(56-60)

31. Does your district have a standing mathematics committee?

(61) 1 No ⟶ SKIP to question 34.

2 Yes

32. Which of the following groups are always included in the membership of the committee? (Check any that apply, and if there is a separate mathematics committee for the elementary grades, answer with respect to that.)

(62) _____ Elementary school teachers

(63) _____ Central office administrators

(64) _____ Elementary school building principals

(65) _____ Building mathematics specialists

(66) _____ Parent/community representatives

(67) _____ Students

33. Are there any state policies or practices which make it particularly important for elementary school mathematics that your district have a mathematics committee?

(68) 1 No

2 Yes → In your experience, which of the following state policies or practices have made it important? (Check any that apply.)

(69) _____ State testing program

(70) _____ State syllabus or curriculum guide

(71) _____ State interest in promoting special topics (e.g., metrics, problem solving, computing)

(72) _____ State policies concerning textbook adoption

(73) _____ Other state policies or practices

PROFESSIONAL DEVELOPMENT

34. Please indicate state and district requirements for in-service education of elementary school classroom teachers.

	Days	
Number of days required by state		(74-75)
Number of additional days required by district (If the sessions are less than a day, give the equivalent number of whole days.)		(76-77)

Keypunch: Duplicate columns 1-7
3(8)

35. To your knowledge, have most elementary school teachers in your district had an opportunity, during the last three years, to attend workshops on the following topics? (Each time you circle a yes under "opportunity," answer the additional two questions for that topic.)

	Opportunity to Attend		About how many of the district elementary school teachers attended workshop(s) on this topic?				Check any of the offerings sponsored or strongly encouraged by the district	
	No	Yes	Very Few	Some	Most	Almost All		
a) Computer applications	1	2	1	2	3	4	_____	(9-11)
b) Fractions	1	2	1	2	3	4	_____	(12-14)
c) Decimals	1	2	1	2	3	4	_____	(15-17)
d) Geometry	1	2	1	2	3	4	_____	(18-20)
e) Hand held calculators	1	2	1	2	3	4	_____	(21-23)
f) Metric measurement	1	2	1	2	3	4	_____	(24-26)
g) Probability & statistics	1	2	1	2	3	4	_____	(27-29)
h) Problem solving & applications	1	2	1	2	3	4	_____	(30-32)
i) Computation with whole numbers	1	2	1	2	3	4	_____	(33-35)
j) Conceptual understanding of the four basic operations (+, −, ×, ÷)	1	2	1	2	3	4	_____	(36-38)
k) Estimation	1	2	1	2	3	4	_____	(39-41)
l) Other math topics	1	2	1	2	3	4	_____	(42-44)

BACKGROUND

36. How many years have you worked as a school administrator in this district (including this year)?

(45-46) [ ][ ] years

37. How many years have you worked in this district (including this year)?

(48) [ ][ ] years

38. Which of the following best describes your responsibilities? (Circle one.)

1 Superintendent of schools
2 Curriculum director
3 Chief district mathematics supervisor/coordinator
4 Other district mathematics specialist
5 Other central administrator
6 Other → Please write in your job title: _____ (50-80)

Keypunch: Dup. 1-7, 4(8)

39. To which of the following organizations do you belong? (Check as many as apply.)

____ National Council of Teachers of Mathematics (NCTM)
____ State or local affiliate of NCTM
____ National Council of Supervisors of Mathematics (NCSM)
____ Association for Supervision and Curriculum Development (ASCD)

40. Which of the following best describes the location of your district? (If your district covers two or more categories, circle the one which includes the greatest number of students.)

1 A rural or farming community
2 A small city or town of fewer than 50,000 people that is not a suburb of a larger place
3 A medium-sized city (50,000-100,000 people)
4 A suburb of a medium-sized city
5 A large city (100,000-500,000 people)
6 A suburb of a large city
7 A very large city (over 500,000 people)
8 A suburb of a very large city

Thank you. We sincerely appreciate your cooperation in completing the questionnaire.

Institute for Research on Teaching

DISTRICT POLICIES AND PRACTICES IN ELEMENTARY SCHOOL MATHEMATICS

Questionnaire for Principals

Michiga

INSTRUCTIONS

is questionnaire is designed to take a minimum of your time.

- All answers are to be provided on the questionnaire itself.
- No long answers are required. Nearly all questions are multiple choice. The rest are short answer.
- There are whole sections that can be skipped if they do not apply to your district.
- We do not want you to look up any answers. Answer each question on the basis of what you already know. Where appropriate, check "Don't know."

ase circle the numbers or check (✓) the spaces corresponding to your responses and enclose the completed stionnaire in the postage paid envelope. If you skip a question (other than when directed to do so), we ourage you to jot down as briefly as possible your reason for skipping. If possible, please return the form thin the next week.

TESTING

Apart from state MEAP tests, are any district-wide achievement tests which include mathematics administered once or twice a year in the elementary grades? (Circle the number opposite your answer.)

1 No ⟶ SKIP to question 3.

2 Yes ⟶ What kinds? (Circle one response.)

1 Only locally-developed tests

2 Only commercially published, standardized tests (e.g., Stanford Achievement Test, Iowa Test of Basic Skills)

3 Both locally-developed and commercially published tests ⟶ a. Which of these types do you consider more important to your district?

1 Locally-developed

2 Commercially published

b. NOW, IN ANSWERING QUESTIONS ABOUT DISTRICT TESTS, CONSIDER ONLY THE TEST YOU FEEL IS MORE IMPORTANT.

Last year who, if anyone, received each of the following reports of results from the district-wide tests? (Check as many as, to your knowledge, apply.)

	Teachers	Principals	Central Administrators	Parents	School Board	Local Newspaper	
a) Scores for individual students	☐	☐	☐	☐	☐	☐	(16-21)
b) Classroom summaries	☐	☐	☐	☐	☐	☐	(22-27)
c) Building summaries	☐	☐	☐	☐	☐	☐	(28-33)
d) District summaries	☐	☐	☐	☐	☐	☐	(34-39)

3. In a typical year, has analysis of test results been the central focus of one or more of the following meetings? (If there is no district testing, circle your responses for state testing only.)

	MEAP Test Results			District Test Results			
	Yes	No	Don't Know	Yes	No	Don't Know	
a) Administrators' meetings attended by elementary school principals	2	1	8	2	1	8	(40-41)
b) Staff meetings in most elementary buildings	2	1	8	2	1	8	(42-43)
c) School board meetings	2	1	8	2	1	8	(44-45)
d) Group meetings of parents of elementary school children	2	1	8	2	1	8	(46-47)

4. Last year, who (if anyone) received each of the following reports of results from the MEAP tests? (Check as many as, to your knowledge, apply.)

	Teachers	Principals	Central Administrators	Parents	School Board	Local Newspaper	
a) Scores for individual students	☐	☐	☐	☐	☐	☐	(48-53)
b) Classroom summaries	☐	☐	☐	☐	☐	☐	(54-59)
c) Building summaries	☐	☐	☐	☐	☐	☐	(60-65)
d) District summaries	☐	☐	☐	☐	☐	☐	(66-71)

TEXTBOOKS

5. Which of the following best describes your district's practices in the selection of elementary school mathematics textbooks? (Circle one response.)

(72) 1 All elementary school teachers in the district are to use the same mathematics textbook series.

2 All elementary school teachers in the district at the same grade level are to use the same mathematics textbook series; different series are allowed across grade levels.

3 The district has a policy that each elementary school is to adopt a single textbook series but different schools may adopt different series.

4 None of the above. (If you checked this response, SKIP to Question 7.)

6. How important were each of the following in the selection of the fourth-grade mathematics series currently used in your building? (Circle the appropriate number in each row.)

	Don't Know/Not Applicable	Little or No Importance	Some Importance	Major Importance	
a) Series was recommended for our district by state mathematics specialist.	0	1	2	3	(73)
b) Series was recommended by district mathematics specialist.	0	1	2	3	(74)
c) Series adequately covers topics on state tests.	0	1	2	3	(75)
d) Series adequately covers topics in district mathematics objectives.	0	1	2	3	(76)
e) Series emphasizes problem solving and applications.	0	1	2	3	(77)
f) Series emphasizes probability and statistics.	0	1	2	3	(78)
g) Series emphasizes metric measurement.	0	1	2	3	(79)

Keypunch: Duplicate
columns 1-11
2(12)

STUDENTS

7. For each of the following practices, circle the number corresponding to the one column which best describes expectations for elementary schools in your district.

Practices	Elementary schools in this district are: Strongly urged or required to follow this practice	Encouraged to follow this practice	Left to themselves to decide whether to follow this practice	Discouraged from following this practice	Strongly urged or required not to follow this practice	
a) Create small ability groups for mathematics instruction	1	2	3	4	5	(13)
b) At the beginning of the year, assign students to classrooms so that the classrooms differ in ability or achievement *	1	2	3	4	5	(14)
c) Provide individualized mathematics instruction	1	2	3	4	5	(15)
d) Retain some students in grade	1	2	3	4	5	(16)

*i.e., try to make classrooms homogeneous.

→ If you circled one of these three numbers, skip to question 9.

75

8. In your district, when deciding whether to retain K-6 students in grade...

	Strongly Agree	Agree	Disagree	Strongly Disagree	
a) Social maturity is more important than academic achievement.	1	2	3	4	(17)
b) Mathematics achievement is as important as reading achievement.	1	2	3	4	(18)
c) Test scores are a major consideration.	1	2	3	4	(19)
d) Achievement of district instructional objectives is a major consideration.	1	2	3	4	(20)

TIME ALLOCATIONS

9. Are guidelines set by the district for the minimum amount of time to be spent on mathematics instruction in any of the grades K-6? (Circle your answer.)

1: 1 No ⟶ Please SKIP to question 13.

2 Yes

76

6. How are district time guidelines communicated to teachers? (Check any that apply.)

_____ Appears in a written document (e.g., curriculum guide)

_____ Is covered in formal meetings (e.g., district in-service, building staff meetings, etc.)

_____ Is covered in individual conferences or informal teacher-administrator interactions

7. About how often are you likely to remind elementary school teachers that they should conform to district time guidelines in mathematics? (Circle your answer.)

1 More than once a year

2 Once a year

3 Rarely, if ever

8. What is your best estimate of the proportion of elementary school teachers who use the recommended minimum amount of time as a guide in planning mathematics instruction? (Circle your answer.)

1 Almost all

2 Most

3 About half

4 Some

5 Very few

DISTRICT CONTENT EMPHASIS

9. In your opinion, how much importance does your district as a whole place on the following topics in elementary school mathematics? (Circle your answers.)

	Don't Know	Little or No Importance	Some Importance	Major Importance	
a) Computer applications	0	1	2	3	(27)
b) Fractions	0	1	2	3	(28)
c) Decimals	0	1	2	3	(29)
d) Geometry	0	1	2	3	(30)
e) Hand-held calculators	0	1	2	3	(31)
f) Metric measurement	0	1	2	3	(32)
g) Probability & statistics	0	1	2	3	(33)
h) Problem-solving & applications	0	1	2	3	(34)
i) Computation with whole numbers	0	1	2	3	(35)
j) Conceptual understanding of the four basic operations (+, -, x, ÷)	0	1	2	3	(36)
k) Estimation	0	1	2	3	(37)

MATHEMATICS SPECIALISTS

14. Do you have specialists assigned to your building who work primarily on mathematics with classroom teachers and/or students? (Circle your answer.)

(38) 1 No

2 Yes → a) Estimate the number of full-time equivalents. ____ (Write your answer here.) (39-43)

b) Check any of the statements below that apply to these specialists.

(44) ____ Specialists work with teachers to improve instruction.

(45) ____ Specialists work with students on enrichment.

(46) ____ Specialists work with students on remediation.

15. In your district, what individuals or groups have been MOST INFLUENTIAL in each of the following activities? (Check all that apply in each row.)

	Does not apply	Superintendent/ curriculum coordinator	District math specialist	Principal	Teacher	Building math specialist	Other individual	Mathematics committee (no particular individual)	Other committee (no particular indiv	
a) Planning or initiating mathematics workshops for elementary school teachers	☐☐	☐	☐	☐	☐	☐	☐	☐	☐	(47-55)
b) Initiating or revising district objectives in elementary school mathematics	☐☐	☐	☐	☐	☐	☐	☐	☐	☐	(56-64)
c) Selecting standardized tests of elementary school mathematics for district-wide use	☐☐	☐	☐	☐	☐	☐	☐	☐	☐	(65-73)
d) Designing or developing tests that focus on the district's elementary school mathematics curriculum	☐☐	☐	☐	☐	☐	☐	☐	☐	☐	Grup 1-11, (13-21)
e) Initiating building-level review of achievement test results	☐☐	☐	☐	☐	☐	☐	☐	☐	☐	(22-30)
f) Initiating or planning building-level reviews of teaching practices in elementary school mathematics	☐☐	☐	☐	☐	☐	☐	☐	☐	☐	(31-39)
g) Recommending textbooks & other materials to be used in elementary school mathematics	☐☐	☐	☐	☐	☐	☐	☐	☐	☐	(40-48)
h) Creating teacher guides which link textbook & other published materials to district or state objectives	☐☐	☐	☐	☐	☐	☐	☐	☐	☐	(49-57)

55

TEACHER QUALIFICATIONS

As a condition of employment, does your district require prospective elementary teachers to present evidence of more competence in mathematics than is required for state certification?

1. No
8. Don't know → SKIP to question 18.
2. Yes → What evidence is required? (Check any that apply.)

____ Mathematics course(s) in addition to those required for certification

____ Satisfactory performance on a state-required teacher certification exam (e.g., the National Teacher Examination)

____ Satisfactory performance on a district-administered test of mathematics competence

____ Other (please specify): _____

Keypunch: Duplicate 1-12, 4[13]

In your opinion, have these hiring practices had any of the following consequences for elementary school teachers? (Consider only teachers hired under these practices.)

	Definitely Yes	Probably Yes	Probably Not	Definitely Not	
a) Teachers spend more time on mathematics.	1	2	3	4	(63)
b) Teachers offer instruction on a greater variety of mathematics topics.	1	2	3	4	(64)
c) Teachers hold students to higher standards of achievement in mathematics.	1	2	3	4	(65)

BACKGROUND

How many years have you worked as a teacher?

[ ]

How many years have you worked as a principal in this district (including this year)?

[ ]

you. We sincerely appreciate your cooperation in completing the questionnaire.

Institute for Research on Teaching

Michigan

DISTRICT POLICIES AND PRACTICES IN ELEMENTARY SCHOOL MATHEMATICS

Questionnaire for Classroom Teachers

INSTRUCTIONS

This questionnaire is designed to take a minimum of your time.

- All answers are to be provided on the questionnaire itself.
- No long answers are required. Nearly all questions are multiple choice. The rest are short answer.
- There are whole sections that can be skipped if they do not apply to your district.
- We do not want you to look up any answers. Answer each question on the basis of what you already know. Where appropriate, check "Don't know."

Please circle the numbers or check (✓) the spaces corresponding to your responses and enclose the completed questionnaire in the postage paid envelope. If for any reason, you skip a question (other than when directed to do so), we encourage you to jot down as briefly as possible your reason for skipping. If possible, please return the forms within the next week.

56

INSTRUCTIONAL OBJECTIVES

1. Has your district written a curriculum guide, scope and sequence chart, or some other document that provides a list of instructional objectives for elementary school mathematics? (Circle the number opposite your answer.)

(11) 1 No ⟶ Please SKIP to question 11.

2 Yes

2. Which one of the following best characterizes the intent of the district's math objectives? (Circle your answer.)

(14) 1 To specify minimum competencies in elementary school mathematics.

2 To provide a comprehensive list of desired learning outcomes in elementary school mathematics.

3. To what extent do district objectives emphasize the following? (Circle your answers.)

	Don't Know	Little or No Emphasis	Some Emphasis	Major Emphasis
a) Conceptual understanding (understanding the "whys" of math such as why 3 x 4 = 12, etc.)	0	1	2	3
b) Computational skills (knowing "how to" perform mathematical operations such as multiplying 36 x 84, reading a thermometer, etc.)	0	1	2	3
c) Story problems and other forms of applications	0	1	2	3

2:82

74

hers

4. Have grade levels at which students should attain each objective been identified?

(18) 1 No ⟶ Please SKIP to question 6.

(19-21) 2 Yes ⟶ a) Approximately how many mathematics objectives have been identified for the fourth-grade level? Write your answer here _____.

b) What is your best estimate of the number of fourth-grade teachers who are careful to cover all fourth-grade mathematics objectives?

(22)
1 Almost all
2 Most
3 About half
4 Some
5 Very few

5. Are students supposed to master all K-3 mathematics objectives before working on any fourth-grade objectives?

(23)
1 No
2 Yes

6. Are there separate tests for each objective?

(24)
1 No
2 Yes

7. Does the district require that records be maintained on the objectives each student has mastered?

(25)
1 No
2 Yes ⟶ How often must these records be updated?

(26)
1. Once a year
2. More often than once a year

8. Does the district provide a list of assignments that identifies textbook or workbook lessons for each objective?

(27)
1 No
2 Yes

9. In your opinion, have district objectives had any of the following consequences for the elementary school mathematics curriculum in your district? (Circle your answers.)

	Definitely Yes	Probably Yes	Probably Not	Definitely Not	
a) More time devoted to topics for which there are objectives	1	2	3	4	(28
b) Less time devoted to topics not included in the district objectives	1	2	3	4	(29
c) Greater uniformity in what is taught across all schools in the district	1	2	3	4	(30
d) Decrease in teacher's opportunity to present advanced topics to gifted students	1	2	3	4	(31

10. For each of the following statements, indicate your degree of agreement by circling the appropriate number:

	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree	
a) Teachers were adequately involved in the development of the district elementary school mathematics objectives.	1	2	3	4	5	(32)
b) The opinions of persons with expertise in mathematics education were adequately taken into account in the development of these objectives.	1	2	3	4	5	(33)
c) These objectives have had advocates with the kind of personality needed to get them accepted by teachers.	1	2	3	4	5	(34)
d) These objectives adequately cover the topics that teachers in your school think ought to be taught.	1	2	3	4	5	(35)
e) These objectives were written to match what teachers were already doing.	1	2	3	4	5	(36)
f) Parents/community leaders are pleased with these objectives.	1	2	3	4	5	(37)
g) District teachers have a legal obligation to follow these objectives.	1	2	3	4	5	(38)
h) Teachers who diligently follow these objectives are likely to receive some recognition or reward for their efforts.	1	2	3	4	5	(39)
i) Teachers who ignore these objectives are likely to be penalized.	1	2	3	4	5	(40)
j) District teachers have been kept well-informed about the elementary school mathematics objectives.	1	2	3	4	5	(41)

57

TESTING

11 Apart from state MEAP tests, are any district-wide achievement tests which include mathematics administered once or twice a year in the elementary grades?

(42) 1 No ⟶ SKIP to question 14.

2 Yes ⟶ What kinds? (Circle one response.)

(43) 1 Only locally-developed tests

2 Only commercially published, standardized tests (e.g., Stanford Achievement Test, Iowa Test of Basic Skills)

3 Both locally-developed and commercially published tests ⟶ a. Which of these types do you consider more important to your district?

(44) 1 Locally-developed

2 Commercially published

b. NOW, IN ANSWERING QUESTIONS ABOUT DISTRICT TESTS, CONSIDER ONLY THE TEST YOU FEEL IS MORE IMPORTANT.

12. In your opinion, do the district-wide tests provide a good measure of student performance on district mathematics objectives?

(45) 2 Yes

1 No

3 No district objectives

13. For each of the following statements, indicate your degree of agreement by circling the appropriate number.

	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree	
a) Teachers were adequately involved in the selection/development of district-wide tests for elementary school mathematics.	1	2	3	4	5	(46)
b) The opinions of persons with expertise in mathematics education were adequately taken into account in the selection/development of these tests.	1	2	3	4	5	(47)
c) This testing program has had advocates with the kind of personality needed to get the program accepted by teachers.	1	2	3	4	5	(48)
d) These tests adequately cover the topics that teachers in your school think ought to be taught.	1	2	3	4	5	(49)
e) These tests were selected (or developed) to match what teachers were already doing.	1	2	3	4	5	(50)
f) Parents/community leaders are pleased with the district testing program.	1	2	3	4	5	(51)
g) District teachers have a legal obligation to teach the content of these district-wide tests.	1	2	3	4	5	(52)
h) Teachers who diligently teach the content of these tests are likely to receive some recognition or reward for their efforts.	1	2	3	4	5	(53)
i) Teachers who do not teach all the content on these tests are likely to be penalized.	1	2	3	4	5	(54)
j) Principals are rewarded for high student scores on these tests.	1	2	3	4	5	(55)
k) Students will score higher on district-wide tests if the textbook is closely followed.	1	2	3	4	5	(56)

14. In your opinion, have state and district testing programs had any of the following consequences for the elementary school mathematics curriculum in your district? (If there is no district testing, answer the question for state testing only.)

	MEAP Testing				District Testing				
	Definitely Yes	Probably Yes	Probably Not	Definitely Not	Definitely Yes	Probably Yes	Probably Not	Definitely Not	
a) More time devoted to topics on the test	(57) 1	2	3	4	1	2	3	4	(61)
b) Less time devoted to topics not on the test	(58) 1	2	3	4	1	2	3	4	(62)
c) Press for more students to master certain topics on the test	(59) 1	2	3	4	1	2	3	4	(63)
d) More students receive remedial instruction	(60) 1	2	3	4	1	2	3	4	(64)

TEXTBOOKS

15. Which of the following best describes your district's practices in the selection of elementary school mathematics textbooks? (Circle one response.)

(65)
1 All elementary school teachers in the district are to use the same mathematics textbook series.
2 All elementary school teachers in the district at the same grade level are to use the same mathematics textbook series; different series are allowed across grade levels.
3 The district has a policy that each elementary school is to adopt a single textbook series but different schools may adopt different series.
4 None of the above. (If you checked this response, SKIP to question 19.)

16. In your opinion, has requiring teachers to use a particular mathematics textbook had any of the following consequences for the elementary school mathematics curriculum? (Circle the appropriate number in each row.)

	Definitely Yes	Probably Yes	Probably Not	Definitely Not	
a) More time devoted to topics emphasized in the text	1	2	3	4	(66)
b) Less time devoted to topics not in the text	1	2	3	4	(67)
c) More topics taught for which teachers have a limited academic background (e.g., geometry, metric measurement)	1	2	3	4	(68)
d) Greater uniformity in the order in which mathematics topics are taught	1	2	3	4	(69)
e) Improved between-grade continuity of the mathematics curriculum	1	2	3	4	(70)

17. What is your best estimate of the proportion of elementary teachers in your school who make daily use of the adopted textbook as the primary source of guidance in deciding what to teach in mathematics?

(71)
1 Almost all
2 Most
3 About half
4 Some
5 Very few

Keypunch: Duplica..
columns 1-11
2(12)

18. For each of the following statements, indicate your degree of agreement by circling the appropriate number.

	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree	
a) Teachers were adequately involved in the selection of the mathematics textbook series used in your school.	1	2	3	4	5	(13
b) The opinions of persons with expertise in mathematics education were adequately taken into account in the selection of this/these textbook series.	1	2	3	4	5	(14
c) This/these textbook series have had advocates with the kind of personality needed to get these books accepted by teachers.	1	2	3	4	5	(15
d) This/these textbook series adequately cover the topics that teachers in your school think ought to be taught.	1	2	3	4	5	(16
e) This/these textbook series were selected to match what teachers were already doing.	1	2	3	4	5	(17
f) Parents/community leaders are pleased with this/these textbook series.	1	2	3	4	5	(18
g) Teachers have a legal obligation to use this/these textbook series as a primary source of instruction.	1	2	3	4	5	(19
h) Teachers who diligently follow this/these textbook series are likely to receive some recognition or reward for their efforts.	1	2	3	4	5	(20
i) Teachers who pay little attention to this/these textbook series are likely to be penalized.	1	2	3	4	5	(21
j) This/these textbook series adequately cover the topics on the state tests.	1	2	3	4	5	(22

STUDENTS

19. For each of the following practices, circle the number corresponding to the one column which best describes expectations for elementary schools in your district.

Practices	Elementary schools in this district are: Strongly urged or required to follow this practice	Encouraged to follow this practice	Left to themselves in deciding whether to follow this practice	Discouraged from following this practice	Strongly urged or required not to follow this practice	
a) Create small ability groups for mathematics instruction	1	2	3	4	5	(23)
b) At the beginning of the year, assign students to classrooms so that the classrooms differ in ability or achievement *	1	2	3	4	5	(24)
c) Provide individualized mathematics instruction	1	2	3	4	5	(25)
d) Retain some students in grade	1	2	3	4	5	(26)

*e.g., tracking.

→ If you circled one of these three numbers, skip to question 22.

59

20. In your opinion, have district retention practices had any of the following consequences for the elementary school mathematics curriculum in your district? (Circle your answers.)

	Definitely Yes	Probably Yes	Probably Not	Definitely Not	
a) Teachers spend more time on mathematics.	1	2	3	4	(27)
b) There is greater uniformity in what is taught across all schools in the district.	1	2	3	4	(28)
c) Teachers have less opportunity to present advanced topics to gifted students.	1	2	3	4	(29)

21. For each of the following statements, indicate your degree of agreement by circling the appropriate number.

	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree	
a) Teachers were adequately involved in the establishment of the district's preferred retention practice.	1	2	3	4	5	(30
b) The district's preferred retention practice reflects what district teachers have long been doing.	1	2	3	4	5	(31
c) Parents/community leaders are pleased with this practice.	1	2	3	4	5	(32
d) Teachers who deviate from this practice are likely to be penalized.	1	2	3	4	5	(33

TIME ALLOCATIONS

22. Are guidelines set by the district for the minimum amount of time to be spent on mathematics instruction in your grade?

(34) 1 No

2 Yes ⟶ What is your best estimate of the proportion of your colleagues who use the recommended minimum amount of time as a guide in planning mathematics instruction?

(35) 1 Almost all

2 Most

3 About half

4 Some

5 Very few

DISTRICT CONTENT (CONTINUED)

23. In your opinion, how much importance does your district as a whole place on the following topics in elementary school mathematics? (Circle your answers.)

	Don't Know	Little or No Importance	Some Importance	Major Importance	
a) Computer applications	0	1	2	3	(36)
b) Fractions	0	1	2	3	(37)
c) Decimals	0	1	2	3	(38)
d) Geometry	0	1	2	3	(39)
e) Hand held calculators	0	1	2	3	(40)
f) Metric measurement	0	1	2	3	(41)
g) Probability & statistics	0	1	2	3	(42)
h) Problem solving & applications	0	1	2	3	(43)
i) Computation with whole numbers	0	1	2	3	(44)
j) Conceptual understanding of the four basic operations (+, -, ×, ÷)	0	1	2	3	(45)
k) Estimation	0	1	2	3	(46)

PROFESSIONAL DEVELOPMENT

24. Has your district sponsored any elementary school mathematics inservice during the last three years?

(47) 1 No → Please skip to question 26.
8 Don't know → Please skip to question 26.
2 Yes

25. For each of the following statements, indicate your degree of agreement by circling the appropriate number.

	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree	
a) Teachers are adequately involved in the planning of elementary school mathematics inservice for the district.	1	2	3	4	5	(48)
b) The opinions of persons with expertise in mathematics education are adequately taken into account in the planning of this inservice.	1	2	3	4	5	(49)
c) The district's elementary school mathematics inservice program has had advocates with the kind of personality needed to get this program accepted by teachers.	1	2	3	4	5	(50)
d) District teachers who diligently attend all available inservice in elementary school mathematics are likely to receive some recognition or rewards for their efforts.	1	2	3	4	5	(51)

BACKGROUND

26. How many years have you worked as a teacher (including this year)?

(52-53) ☐☐

27. How many years have you worked as a teacher in this district (including this year)?

(54-55) ☐☐

28. Do you currently teach mathematics to fourth graders?

(56) 2 Yes
1 No

Thank you. We sincerely appreciate your cooperation in completing the questionnaire.

(57)

(58)

Appendix D

District Policy Study: Daily Logs and Weekly Questionnaire (1982-83)

Do not write in this space

LOG FORM 1

EXAMPLE #1

DAILY LOG: WHOLE GROUP INSTRUCTION

Name: _____ Date: _____

Time: _____ to _____

General Purpose of Lesson (Check all that apply)

- ☐ Introduce new topic(s)
- ☐ Provide drill/practice for topic(s) introduced in this unit
- ☐ Review topic(s) introduced in earlier units
- ☐ Test (Name or Type?)

  _____

Format of Lesson

- ☐ Teacher-directed instruction
- ☐ Seatwork assignments ... (Please note page and item numbers or attach a copy)
  - ☐ textbook exercises (s)
  - ☐ games/puzzles
  - ☐ other instructional materials (e.g., ditton, problems on board)
- ☐ Homework assignment

Was any part of this lesson presented as small group or individualized instruction?

- ☐ Yes → Please describe that part of lesson in a Small Group/Individualized Instruction Log
- ☐ No → Complete only the grid below

63

WHOLE GROUP INSTRUCTION

TOPIC(S)	EXAMPLE(S)[1]	CATALOGUE CODE(S)	EMPHASIS[2] (Please circle)
			1 2 3
			1 2 3
			1 2 3
			1 2 3
			1 2 3

More than 5 topics taught? ☐ No ☐ Yes

1. Please provide examples of problems that ...
   (a) were difficult to classify and/or
   (b) dealt with topics covered for the first time this school year

2. Emphasis scale = 1 = only topic emphasized in lesson (emphasized = 20% or more of lesson)
   2 = one of two or three topics emphasized in lesson
   3 = in the lesson, but not emphasized

LOG FORM II

EXAMPLE # 2

Do not write in this space

DAILY LOG SMALL GROUP/INDIVIDUALIZED INSTRUCTION

Name _____ Date _____

Time _____ to _____

Lesson Format ☐ Individualized ☐ Small Group

General Purpose of Lesson (check all that apply for each level)	High Group/ Individual	Middle Group/ Individual	Low Group/ Individual
(a) Introduce new topic(s)	☐	☐	☐
(b) Provide drill/practice of topic(s) introduced in this unit or covered in this objective	☐	☐	☐
(c) Review topic(s) introduced in earlier units of earlier objectives	☐	☐	☐
(d) Test (name or type?) _____	☐	☐	☐

HIGH Group or Target Individual

TOPIC(S)	EXAMPLE(S)[1]	CATALOGUE CODE(S)	EMPHASIS[2] (Please circle)
			1 2 3
			1 2 3
			1 2 3
			1 2 3
(More than 5 topics taught? ☐ NO ☐ YES)			1 2 3

1 Please provide examples of problems that
(a) were difficult to classify and/or
(b) dealt with topics covered for the first time this school year by any group or individual

2 Emphasis Scale = 1 = only topic emphasized in lesson (emphasized = 20% or more of lesson)
2 = one of two or three topics emphasized in lesson
3 = in the lesson, but not emphasized

MIDDLE Group or Target Individual

TOPIC(S)	EXAMPLE(S)[1]	CATALOGUE CODE(S)	EMPHASIS[2]
			1 2 3
			1 2 3
			1 2 3
			1 2 3
[More than 5 topics taught? [ ] NO [ ] YES]			1 2 3

LOW Group or Target Individual

TOPIC(S)	EXAMPLE(S)[1]	CATALOGUE CODE(S)	EMPHASIS[2]
			1 2 3
			1 2 3
			1 2 3
			1 2 3
[More than 5 topics taught? [ ] NO [ ] YES]			1 2 3

2. Emphasis Scale: 1 = only topic emphasized in lesson (emphasized = 20% or more of les-
2 = one of two or three topics emphasized in lesson
3 = in the lesson, but not emphasized

Keypunch (10)=1

[ ][ ][ ][ ] [ ][ ][ ] [ ][ ]
(1-5) (6-8) (9-10)

TIME of Lesson _____ to _____

Name _____

Date ___/___/___ [ ]
(11-12)(13-14)(15-16) (17)

DAILY MATHEMATICS LOG

1. GRID #1: Content catalog topics taught or assigned to S2: Student at 80th Percentile (either individually or as a member of a group).

TOPIC	EXAMPLES (one or two per topic)	CATALOG CODE	EMPHASIS (Please circle)
		(18-22)	1 2 3 (23)
		(25-29)	1 2 3 (30)
		(32-36)	1 2 3 (37)
		(39-43)	1 2 3 (44)
		(46-50)	1 2 3 (51)

Emphasis scale
1 = ONLY topic emphasized in lesson (emphasized = 20% or more of lesson)
2 = one of 2-4 topics emphasized in lesson
3 = an important topic for this lesson even though not emphasized in the lesson

65

2. Check any of the following statements that describe the lesson portrayed in Grid #1.

(52) [ ] Lesson included teacher-directed group instruction
(54) [ ] Lesson included content-catalog topics not covered in your primary textbook
(Note: If you don't use a textbook, consider your primary source of instructional material)
(53) [ ] A test was given (name or type?) _____ [ ] (54)

3. Which of the following materials, if any were used in this lesson? (check all that apply)

(58) [ ] Textbook exercises, or ditto: that accompany textbook series
(59) [ ] Other commercially prepared ditto/supplementary materials
(60) [ ] Teacher-prepared exercises/materials (e.g., ditto: or problems on board)
(61) [ ] Math games/puzzles

4. Among students who studied the topics in Grid #1, did a majority work on written math assignments...

(63) (a) During the math lesson? [ ] Yes [ ] No
(64) (b) During other periods of the school day? [ ] Yes [ ] No
(65) (c) At home? [ ] Yes [ ] No

5. Were all three target students taught exactly the same content-catalog topics (i.e. those you have described in Grid #1)?

(67) [ ] Yes —> STOP HERE
[ ] No —> CONTINUE ON THE BACK OF THIS PAGE

6. Does Grid #1 accurately describe content-catalog topics taught or assigned to S1 (best math student)?

(48) ☐ Yes ⟶ Skip to question 7
☐ No ⟶ Complete Grid #2; then answer question 7

GRID #2: Content-catalog topics taught or assigned to S1: Best Math Student (either individually or as a member of a group).

Key/Punch: (1C)=2; Dup (1-9),(11-17)

TOPIC	EXAMPLES (one or two per topic)	CATALOG CODE	EMPHASIS (Please circle)
		(18-22)	1 2 3 (23)
		(24-28)	1 2 3 (29)
		(30-34)	1 2 3 (35)
		(36-40)	1 2 3 (41)
		(42-46)	1 2 3 (47)

Emphasis scale: 1 = ONLY topic emphasized in lesson (emphasized = 20% or more of lesson)
2 = one of 2-4 topics emphasized in lesson
3 = an important topic for this lesson even though not emphasized in the lesson

7. Does Grid #1 accurately describe content-catalog topics taught or assigned to S3 (student at 20th percentile)?

(49) ☐ Yes ⟶ STOP HERE
☐ No ⟶ Complete Grid #3

GRID #3: Content-catalog topics taught or assigned to S3: Student at 20th Percentile (either individually or as a member of a group).

TOPIC	EXAMPLES (one or two per topic)	CATALOG CODE	EMPHASIS (Please circle)
		(51-55)	1 2 3 (56)
		(57-61)	1 2 3 (62)
		(63-67)	1 2 3 (68)
		(69-73)	1 2 3 (74)
		(75-79)	1 2 3 (80)

Emphasis scale: 1 = ONLY topic emphasized in lesson (emphasized = 20% or more of lesson)
2 = one of 2-4 topics emphasized in lesson
3 = an important topic for this lesson even though not emphasized in the lesson

TEACHER NAME _____

DATES OF WEEK BEING DESCRIBED: _____ to _____

WEEKLY QUESTIONNAIRE

(Circle answers and fill in appropriate blanks.)

1. Did any non-target students in your class study any mathematics during the past week that came from other than your regular sources of mathematics materials and which none of the three target students have studied thus far this year?

   1 No

   2 Yes ⟶ Briefly describe the mathematics topics studied (you may use the catalog if you like) and the purpose for having the students study the content.

   a. Mathematics topics _____

   _____

   _____

   b. Purpose _____

   _____

   _____

2. Did you teach any mathematics to target students this past week that was stimulated by persons or materials that are not a common day-by-day source of ideas for your mathematics instruction?

   1 No

   2 Yes ⟶ Please list the person(s) or materials and the mathematics taught below.

   a. Person/materials _____

   _____

   b. Mathematics _____

   _____

   _____

3. Did you attend any workshops/conferences on mathematics this past week?

1 No

2 Yes ⟶ Please indicate the workshop/conference sponsor and content below.

a. Who sponsored the workshop/conference?

_____ School

_____ District

_____ Professional organization (write in name below)

_____

_____ Other (such as ISD, commercial)

b. Content of workshop/conference _____

4. Indicate below any conversations you have had about the teaching of mathematics during the past week (circle all that apply).

1 No conversations about mathematics

2 Regularly scheduled parent conference

3 School building staff meeting

4 Other ⟶ Other teachers in your school 1

Other teachers not in your school 2

Your school's principal 3

Other district administrators 4

Parent 5

Keypunch: (7) = 1

Please do not write in this space.

☐☐☐☐☐☐☐
(1-3) (4-7)

NAME _____

DATES OF WEEK

FROM ___/___/___
(8-9) (10-11)

TO ___/___/___
(13-14) (15-16) (17-18)

WEEKLY QUESTIONNAIRE

(Check answers and fill in appropriate blanks.)

1. Did you attend any workshops/conferences on mathematics this past week?

(20) ☐ No

☐ Yes ⟶ Please indicate the workshop/conference sponsor and content below.

a. Who sponsored the workshop/conference? (Check all that apply.)

(21) ☐ School

(22) ☐ Local District

(23) ☐ Intermediate School District

(24) ☐ Professional organization (write in name): _____ (25)

(26) ☐ Other (who?): _____ (27)

b. Content of workshop/conference _____ (28)

2. Indicate below any conversations you have had about the teaching of mathematics during the past week (check all that apply).

(29) ☐ No conversations about mathematics

(30) ☐ Regularly scheduled parent conference

(31) ☐ School building staff meeting

(32) ☐ Other Conversations ⟶ ☐ Other teachers in your school (33)

☐ Other teachers not in your school (34)

☐ Your school's principal (35)

☐ Other district administrators (36)

☐ Parent (37)

☐ Other (38)

3. Did you teach mathematics to target students this past week that was stimulated by persons or materials that are not a common day-to-day source of ideas for your mathematics instruction?

(39) ☐ No

☐ Yes Please list below the person(s) or materials and the mathematics topics taught.

(40) a. Person/materials _____

_____

_____

(41-65) b. Mathematics topics _____

_____

_____

_____

10/82

67

92

Keypunch: (7) = 1

NAME _____

Please do not write in this space.

(1-5) (6-7)

DATES OF WEEK

FROM ___/___/___ (8-9) (10-11)

TO ___/___/___ (13-14) (15-16) (17-18)

WEEKLY QUESTIONNAIRE

(Check answers and fill in appropriate blanks.)

1. Did you attend any workshops/conferences on mathematics this past week?

(20) ☐ No

☐ Yes ⟶ Please indicate the workshop/conference sponsor and content below.

a. Who sponsored the workshop/conference? (Check all that apply.)

(21) ☐ School

(22) ☐ Local District

(23) ☐ Intermediate School District

(24) ☐ Professional organization (write in name): _____ (25)

(26) ☐ Other (who?): _____ (27)

b. Content of workshop/conference _____ (28)

2. Indicate below any conversations you have had about the teaching of mathematics during the past week (check all that apply).

(29) ☐ No conversations about mathematics

(30) ☐ Regularly scheduled parent conference

(31) ☐ School building staff meeting

(32) ☐ Other Conversations ⟶

- ☐ Other teachers in your school (33)
- ☐ Other teachers not in your school (34)
- ☐ Your school's principal (35)
- ☐ Other district administrators (36)
- ☐ Parent (37)
- ☐ Other (38)

3. Did you teach mathematics to target students this past week that was stimulated by persons or materials that are not a common day-to-day source of ideas for your mathematics instruction?

4th Grade

(39) ☐ No

☐ Yes ⟶ Please list below the person(s) or materials and the mathematics topics taught.

(40) a. Person/materials _____

(41-05) b. Mathematics topics _____

10/82

5th Grade

Keypunch: Dup. (1-6) 1 a. 2

(8) ☐ No

☐ Yes ⟶ Please list below the person(s) or materials and the mathematics topics taught.

a. Person/materials _____ (9)

b. Mathematics topics _____ (10-15)

ACHER NAME _____

TES OF WEEK BEING DESCRIBED: _____ to _____

WEEKLY SUMMARY OF MATERIALS

Please record below the materials you used in providing mathematics instruction during the past week. If not all students used the same materials, please describe the materials used by Target Student II (i.e., student at 80th percentile in mathematics aptitude).

If you did some testing, give the name of the test and the purpose for testing. If you used math games or puzzles, also provide the name, purpose and publisher if convenient. For assignments in materials other than your standard text, attach a copy, circle the portions used, and indicate on the copy the date(s) used. Assignments in your standard text should simply be identified by page number and a list of exercises worked.

MONDAY

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

Appendix E

District Policy Study: Teacher Interviews

(Fall 1982, Spring 1983, Spring 1985)

ref;7/19/82

QUESTIONS FOR PREYEAR INTERVIEW: N=36 STUDY

I. Classroom Organization

A. Time spent on math

1. (Interviewer: Look at time question on questionnaire. Ask about anything that looks unclear.)

2. Do students work on math at other times during the day?

___ Yes.--→Probe for times and number of students involved.

___ No.

3. Typically, do any of your students receive math instruction from any specialist teacher (Title I, Resource, etc.)?

___ Yes.--→ Probe for typical number of students involved and whether content differs from that provided to the rest of the class.

___ No.

4. Do you have a classroom aide?

___ Yes. --→ Does the aide ever work with kids in math?

___ Yes.---How do you use the aide in math?

___ No.

___ No.

5. How frequently do you deviate from your schedule for mathematics instruction?

___ Often or sometimes (record teacher's exact response). --→What leads to change your schedule?

___ Never.

1982

PREYEAR INTERVIEW, F '82

B. Curriculum materials used.

1. What textbook or textbooks will fourth-graders in your class use this year? (record additional books on back.)

	Publisher	Copyright date	Grade level
a.			
b.			

2. How much use do you make of supplementary materials?

___None--→skip to question 4.

___Some or much

3. Are there some topics you supplement heavily?

___Yes---Topics Information to identify materials

___No

4. Do you use other materials or classroom aides, for example, Cuisenaire rods, hand-held calculators, or math games?

___Yes--→How do you use them?

___No

C. Grouping practices.

1. Do you use a small-group or individualized approach at all in teaching fourth-grade math?

___No--→skip to section II.

___Yes, both.

___Yes, individualized only--→skip to question 3.

___Yes, small-group only--→answer question 2 then skip to section II.

2. Tell me about your math groups.

Probe for: basis of assignment to groups;
whether group membership is likely to change during the year;
why teacher uses small groups.

3. Tell me how students work in your individualized instruction.

Probe for: whether individualization is of content or only pace;
why teacher uses individualization;
how teacher selects students for individualized program if entire class is not involved.

II. School-level Policies and Practices

A. How is your math different from that of other teachers at your grade level in your building?

Probes: Do you know if other teachers are teaching topics you don't teach at this grade level?
How about skipping topics you teach?
Do you press for the same levels of student achievement in math as others in the building?

B. Subject-matter priorities

1. Do you place a higher priority on math than other teachers in your building?

___Yes--> Why?

___No

2. Thinking of the entire school curriculum, are there particular subject matter priorities?

___No--> Skip to question D.

___Yes

a. What are they?

b. Who identifies them?

c. Are these important to the principal?
___Yes--> How does he/she promote these?

___No

d. Are these important to teachers?
___Yes--> How do they promote these?

___No

3. How much does the staff as a whole agree on subject matter priorities?

___Little or no agreement-->Skip to "C. Principal."

___Some or substantial agreement

a. How are these priorities reflected in the curriculum?

b. What is done to see that they are taught?

c. Are you in agreement with these priorities?

C. Principal

1. Do you think your principal has a strong background in math?

2. How would you describe your principal's style of instructional leadership?

D. Student policies

1. Is individualization a big deal at this school?

___No-->Skip to question 2.

___Yes

a. Does the principal encourage it, discourage it, or leave teachers to make the decision?

___Encourage-->How?
How strong is the push?

___Discourage-->How?
How strong is the push?

___Leave teachers to make the decision

b. Do other teachers in your building encourage or discourage individualization in math?

___No-->Skip to question 2.

___Encourage-->How?
How strong is the push?

___Discourage-->How?
How strong is the push?

2. Is there a press to use small ability groups in math?

___No-->skip to question 3.

___Yes

a. From whom?

b. How?

c. How strong is the push?

3. How are students assigned to classes at the beginning of the year (e.g., heterogeneous classrooms by ability or achievement)?

4. Do teachers in your school agree on how retention decisions should be made?

___Yes-->How is this currently decided in your school?

___No

E. Grade-to-grade coordination

1. Is mathematics coordinated from grade to grade in your school?

___Yes-->How?

___No

F. Now I'ld like to know about school-related meetings you attend, and whether mathematics is discussed at these meetings. I will name several types of meetings. For each type you attend, please tell me how often the meetings are held and whether any math discussions were a big deal at the meetings.

Type	Attend?	How often?	Big deal math discussions
a. Building staff meetings.			
b. Curriculum committees			
c. Other teacher meetings (e.g., grade-level)			

III. Teacher's understanding of curriculum policies

A. What changes do you foresee in mathematics in this district in the next few years? What will the district do to accomplish these changes?

Probe: Do you think the district will push increased attention to student achievement? A change in importance given to individualization? Particular topics to be taught? More time (or courses) in mathematics required of students?

B. What national trends do you see in public school mathematics?

Probe: Do you think achievement standards will get increased attention? Particular topics? Grouping practices or other instructional strategies?

IV. Past influences on teacher's content decisions

A. (For teachers indicating a change in grouping practices on the little survey.)

1. You indicated that you have changed the amount you use a (whole group, small group, or individualized) approach to mathematics instruction. Tell me about this change.

2. About when did you make the change?

3. Any particular reason for the change?

4. Have you made substantial changes in grouping in preceding years? (Probe for approximate date and reason for change)

A. (For teachers indicating no change in grouping practices on the little survey.)

1. Have you ever made a substantial change in your use of small groups or individualized instruction in mathematics?

___ No → Skip to question B.

___ Yes

2. About when did you make the change?

3. Any particular reason for the change?

B. (For teachers indicating an increase or decrease on questionnaire item about changing the amount of school time devoted to fourth-grade mathematics.)

1. Do you remember approximately when you (increased: decreased) the amount of time you spend on math?

2. About how large was the change?

3. Can you say anything about why you've made this change?

B.[1] (For teachers indicting no change.)

1. Are there any years in which you devoted significantly more or less time to math than you plan for this year?

___No-->Skip to question C.

___Yes

2. When?

3. About how much more or less time?

4. Can you say anything about why you changed?

C. Have you changed your press for standards of achievement over the years (i.e., level of achievement you find acceptable, or standards of mastery, or degree of mastery)?

___No-->Skip to section V.

___Yes

1. When?

2. Why?

3. Can you think of any specific topics you formerly wanted all fourth-graders to master and now teach for exposure only?

4. How about topics formerly taught for exposure and now taught for mastery?

V. Interactions concerning math in previous years.

A. In addition to the meetings discussed earlier, do you recall discussing mathematics with anyone in your building during the past year?

___No-->Skip to question B.

___Yes

1. Whom did you talk with?

2. About how often did you talk with this person about math?

3. Do you remember what was discussed in any of these conversations? (If the teacher has had frequent math conversations with anyone, probe specifically for discussion about the five types of content decisions.)

(Repeat these three questions for each person mentioned. When you have gone through everyone mentioned the first time, ask whether they discussed math with anyone else. If they say no, but have still not mentioned the principal or any teachers, suggest them.)

B. Parent conferences

1. How often do you hold parent conferences?

2. I'm sure some parents ask about how their child is progressing in mathematics. Do you remember any parents who asked other questions about your mathematics ?

___Yes-->What did they ask?

___No

3. Have parents ever suggested changes in what you do in math?

___Yes---What have been your reactions?

___No

4. Do you talk to parents outside of the regularly scheduled conferences?

___No

___Yes--→Has mathematics come up in those conversations?

___Yes---Do you remember what was said?

___No

C. Did you have any significant conversations about mathematics in the past year that we haven't talked about yet?

___Yes--→Tell me about them.

___No

VI. Individuals in the district influential in mathematics.

(Ask these questions only if you have time left at this point. Otherwise these questions can be asked in a phone interview early in the school year.)

A. Can you name any individuals in the district who have a large influence on elementary school mathematics? (Get name and job. If responses are all within district hierarchy, indicate that we are interested in people outside the hierarchy as well.)

B. Are there people in your building, in the district, or elsewhere, whose advice you particularly value when it comes to mathematics? (Probe as in preceding question.)

Spring 1983

5/23/83

END OF YEAR INTERVIEW (N=34)

PREPARATION

I. Reread little survey and preyear interview and questionnaire to see if there is anything that needs to be clarified or verified. Anything else to be pursued from weekly questionnaires?

II. If you are sure of some of the items on the Background Information sheet (p. 1), you can fill in ahead of time and ask teacher to verify. **On items marked with asterisks, ask for elaboration of "yes" answers.

III. Check to see how much homework teacher assigns and note in appropriate space in Homework section, p. 5.

IV. Examine lesson format in the textbook in preparation for questions on pp. 8-12.

V. Review notes on district policy; record names or other pertinent information in District/School Policy section of the interview (pp. __).

VI. If during the interview you sense that content decisions may be parsimoniously described (a la Andy Lincoln), ask whatever questions will generate that description without worrying about conflicts with other parts of the interview. (Then go back to interview schedule.)

BACKGROUND INFORMATION SHEET

1. How many students did you have for mathematics in September?

_____4th grade _____5th grade

2. How many students do you have in your math class now?

_____4th grade _____5th grade

3. If you teach a split class, please give the current number of students at each grade level.

_____3rd _____4th _____5th _____6th

**4. Did you pool students with another teacher for mathematics at any time during the year?

_____No _____Yes - explain

**5. Were any students permanently reassigned from your class to another teacher or from another teacher to your class during the year?

_____No _____Yes - explain

6. How many 4th grade homerooms are there in your building? (Count splits as ½.)

_____

7. How many 5th grade homerooms are there in your building? (Count splits as ½.)

**8. Are some of these homerooms higher or lower in average ability than the others?

_____No _____Don't know _____Yes - explain

**9. Are there "special" teachers or aides in your building this year who work with some of your students in math?

_____No _____Yes - explain

10. List any pullout programs that affect <u>your</u> mathematics class (gifted, comp. ed., etc.)

GROUPING

1. At the beginning of the year, you described your usual grouping practice as follows (insert summary of grouping practice from preyear interview).

   a. Did your actual practice this year differ from what I just described? Check specifically for:

Small Group/Individualized	Whole Group
- number of groups	- Did students ever work on different assignments?
- size of groups	- tracking
- stability of groups	- pooling
- individualized instruction	
- tracking	

   b. (Optional) SUMMARIZE what teacher has just said about above details. ASK IF SUMMARY IS ACCURATE.

2. Summarize your understanding of how the target students fit into the grouping just described--orask, if you are unsure. ASK THE TEACHER IF YOUR UNDERSTANDING IS ACCURATE.

CHANGE IN TARGET STUDENTS (omit for whole group teachers)

1. Do you still think that target student 1 is among the highest students in the class in terms of aptitude for mathematics?

_____yes _____no--where does he/she fall?

2. Do you still think that target student 2 ranks about ___th or ___th from the top in aptitude for mathematics?

_____yes _____no--where does he/she fall?

3. Do you still think target student 3 ranks about ___th or ___th from the bottom in aptitude for mathematics?

_____yes _____no--where does he/she fall?

MATH OUTSIDE OF CLASSTIME - Refer to log forms

1. On the logs you have reported the amount of time devoted to mathematics class. During the mathematics class, did students ever have a chance to work on anything other than math?

   _____no

   _____yes --About how often did this happen? (daily? infrequently?)

   --When this happened, how many students do you estimate typically worked on subjects other than math?

   _____all _____most _____a few

   --On days when students worked on more than one subject during math, how much of the period do you estimate typically was spent on math?

   _____1/4? _____1/2? or what?

2. Was this mathematics period typically longer, shorter, or about the same as the mathematics period last year?

   _____same

   _____More--why?

   _____Less--why?

(Refer to question 4 on the log form)

3. (Refer to question 4 on the log form. Ask question 3A of those teachers who never checked "other periods" and 3B of all other teachers.)

   A. You never indicated that students work on math during "other periods" of the school day. Does this mean that your students never worked on math at other times during the school day?

   B. When you checked "other periods of the school day," did this refer to a regular time for mixed seatwork or what?

   _____regular mixed seatwork (ask for length of period)

   _____other (describe)

4. How much of this "other time" would you guess your students typically spend on math?

   _____a quarter?

   _____a half? _____or what?

OMIT THE FOLLOWING QUESTIONS ON HOMEWORK FOR TEACHERS WHO GAVE NO HOMEWORK

1. You often/seldom reported giving homework. On days when mathematics homework was given, how much time do you think the typical student spent doing the homework?

   _____minutes

2. Were students expected to do all their homework at home as opposed to school?

   _____yes

   _____no -- Probe to get a good estimate of how the "homework" time relates to the "other periods" time, so that our estimate of total time is reasonable.

3. How do you decide when to give homework?

4. Do you ever assign homework on a topic not covered in class that day?

   _____no

   _____yes--Did you add that topic to the logs? ____no ____yes

   --Are there any topics you covered only in homework? __no __yes

   Can you think of one or two examples?

MORE ON TIME

1. For days when you did not check home work, do you think the typical student spent any time working on math at home? (Ask for account in minutes)

2. Think about the total amount of time students spent working on math assignments during other periods of the school day and at home. How does out-of-class time spent on math assignments for this year compare with that for last year's class?

   _____ more -- Why?

   _____ less -- Why?

   _____ about the same

STUDENT CHARACTERISTICS

A. When compared with last year's class, was this year's class

_____more able

_____less able

_____about the same in mathematics

B. Are there other important ways in which this year's class differs from your class last year?

C. Did these differences cause you to alter

a) your grouping? _____No

_____Yes--in what way?

b) choice of topics? _____No

_____Yes--explain

c) time spent on certain topics? _____Yes--explain

_____No

d) your standards for student achievement? _____Yes--explain

_____No

TEXTBOOKS

Teachers use textbooks in a variety of ways. I'm going to describe 3 common styles of textbook use, and ask you to choose which style most nearly matches your own. Then I'll ask you some specific questions about how you use your book.

A. Some teachers start with the first lesson in the book at the beginning of the year and work straight through the book, lesson by lesson.

B. Other teachers essentially work straight through the book, but deliberately omit groups of lessons or whole chapters.

C. Finally, some teachers skip around in the book, changing the order in which topics or chapters are presented.

⟶ Which of these sounds most like you?

A⟶ Go to I (p. 8)

B⟶ Go to II (p. 9)

C⟶ Go to III (p. 10)

None of the above⟶ Improvise: Might begin with, "Can you in a few words describe how you use the book?

I. (FOR A -- STRAIGHT-THROUGH STYLE)

I. A. How far (did/will) you get in the book this year?

B. Can you think of any lessons you omitted or did you cover at least part of every lesson?

C. Each lesson in the Teacher's Edition of most textbooks has several distinct sections. As I name each of these, I would like for you to tell me if you typically teach that part of the lesson.

1. teacher-directed introductory material

_____ yes

_____ no ⟶ Why not?

2. problem sets for student practice

_____ yes

_____ no ⟶ Why not?

3. enrichment activities or challenge exercises such as starred problems or brain teasers

_____ yes

_____ no ⟶ Why not?

4. story problems at the end of a lesson

_____ yes

_____ no ⟶ Why not?

5. review exercises at the end of a lesson that are not related to the content of that lesson (e.g., keeping fit)

_____ yes

_____ no ⟶ Why not?

GO TO THE QUESTION ON SUPPLEMENTARY MATERIALS (p. 13)

II. (FOR B--SELECTIVE OMISSION STYLE)

A. How far (did/will) you get in the book this year?

B. Why do you choose to teach some topics while omitting others?

C. (Using the chapter headings in a copy of the textbook's table of contents as a guide) ASK--What chapters do you omit? (If necessary, describe as chapters where they skip all, or almost all, of the lessons.)

D. Do you typically use all of the textbook lessons that deal with a topic you've decided to teach?

_____ yes

_____ no Why not?

E. Each lesson in the Teacher's Edition of most textbooks has several distinct sections. As I name each of these, I would like for you to tell me if you typically teach that part of the lesson.

1. teacher-directed introductory material

_____ yes

_____ no ⟶ Why not?

2. problem sets for student practice

_____ yes

_____ no ⟶ Why not?

3. enrichment activities or challenge exercises such as starred problems or brain teasers

_____ yes

_____ no ⟶ Why not?

4. story problems at the end of a lesson

_____ yes

_____ no ⟶ Why not?

5. review exercises at the end of a lesson that are not related to the content of that lesson (e.g., keeping fit)

____ yes

____ no ⟶ Why not?

GO TO THE QUESTION ON SUPPLEMENTARY MATERIALS (p. 13)

III. (C--SKIP-AROUND STYLE)

A.1. Why do you change the order?

A.2. Why do you choose to teach some topics and not others?

B. (Using the chapter headings in a copy of the textbook's table of contents as a guide) ASK--

——→ What chapters did you omit? (If necessary, describe as chapters where they skip all, or almost all, of the lesson.)

C. Do you typically use every textbook lesson that deals with a topic you've decided to teach?

____ yes

____ no ——→ Why not?

D. Each lesson in the Teacher's Edition of most textbooks has several distinct sections. As I name each of these, I would like for you to tell me if you typically teach that part of the lesson.

1. teacher-directed introductory material

____ yes

____ no ——→ Why not?

2. problem sets for student practice

____ yes

____ no ——→ Why not?

3. enrichment activities or challenge exercises such as starred problems or brain teasers

____ yes

____ no ——→ Why not?

4. story problems at the end of a lesson

____ yes

____ no ——→ Why not?

5. review exercises at the end of a lesson that are not related to the content of that lesson (e.g., keeping fit)

_____ yes

_____ no ⟶ Why not?

GO TO THE QUESTION ON SUPPLEMENTARY MATERIALS

SUPPLEMENTARY MATERIALS

1. Do you use supplementary materials in your math class?

_____no

_____yes ⟶ Can you briefly describe why you use them?

(Probe to determine if teacher uses these materials to:

_____present new topics not covered in text

_____provide additional practice for topics presented in the text

TEXTBOOK USAGE

1. Including this year, how long have you used your present math text?

_____3 or more years ⟶ Has your use of the text changed from last year to this year?

_____no

_____yes ⟶ Explain

_____1 year
_____2 years
⟶ Did the change in books affect:

a. topics you teach? _____no _____yes ⟶ Explain

b. grouping of students? _____no _____yes ⟶ Explain

c. total time devoted to math? _____no _____yes ⟶ Explain

d. time on selected topics? _____no _____yes ⟶ Explain

STANDARDS

1. A. Of all the math topics you covered this year, what are the two or three topics you consider most important for (fourth grade/fifth grade) students to learn?

   B. Pick a topic at about the level of our catalog (other than facts or story problems) and ask.....

   → How did you decide when to move from (name the topic) to the next topic you covered?

   (Probe for level of student achievement and percent of students)

2. A. (Fourth grade) I assume you covered multiplication this year. How did you decide when to shift from lessons on one-digit multipliers to lessons on two-digit multipliers?

   (Probe for level of student achievement and percent of students)

   B. (Fifth grade) I assume you covered division this year. How did you decide when to shift from lessons on one-digit divisors to lessons on two digit divisors?

   (Probe for level of student achievement and percent of students)

3. Are there any topics you teach for "exposure" only?

   (If asked to explain "exposure," respond, "topics taught for exposure are those where you are not concerned about the number of students who master the topics.")

   _____no

   _____yes → please name two or three of these

   How did you decide when to move from (name any topic mentioned) to the next topic you covered?

   (If appropriate, probe for levels of achievement and percent of students.)

RETENTION

1. How many of your students will repeat this grade next year?

   _____

2. Is this typical of the number of students you have retained in recent years?

   _____ No ⟶ Explain (then go to 3)

   _____ Yes ⟶ [Is number 0 or 1? ⟶ SKIP TO NEXT SECTION
   [Is number 2 or more? ⟶ Go to 3

3. Has your school or district provided any guidance or advice about retaining students?

   _____ no

   _____ yes ⟶ Explain

ASSIGNMENT TO CLASSES

1. Will mathematics achievement play any part in the assignment of your students to classes for next year?

   _____ no

   _____ yes ⟶ Has this had any influence on your mathematics instruction this year?

   _____ no

   _____ yes ⟶ Explain

RECORDS

Other than your own records of daily work, what kind of records have been kept this year on student progress in matheamtics?

(Who sees these records?)

(What happens to them?)

Without too much trouble, could we obtain copies of these records--including report cards, but not your grade book--for the target students? Names should be blanked out, and photocopies identified simply as target student 1, 2, or 3.

PERCEPTIONS OF DISTRICT AND SCHOOL POLICY

I am now going to ask you several questions in an attempt to identify areas where your school or district has active policies. In areas where there are no policies, the questioning should go quickly.

1. MATHEMATICS OBJECTIVES

   A. Are you aware of any special efforts by your district to promote policies in the area of mathematics objectives?

   _____no

   _____yes -- briefly describe

   B. Is your school making any (special/additional) efforts to promote either the district's policy or its own policy in this area?

   _____no

   _____yes -- briefly describe. (Clarify whether these reflect school initiatives regarding district policy, or the school's own policy.)

   C. How has (this policy/these policies) affected your teaching?

2. MEAP (MICHIGAN ASSESSMENT) TESTING

   A. Are you aware of any special efforts by your district to promote policies in the area of MEAP testing?

   _____no

   _____yes -- briefly describe

   B. Is your school making any (special/additional) efforts to promote either the district's policy or its own policy in this area?

   _____no

   _____yes -- briefly describe. (Clarify whether these reflect school initiatives regarding district policy, or the school's own policy.)

   C. How has (this policy/these policies) affected your teaching?

3. STANDARDIZED OR DISTRICT-GENERATED TESTS OF MATHEMATICS ACHIEVEMENT

(NAME: _____)

A. Are you aware of any special efforts by your district to promote policies in the area of standardized or district-generated tests of mathematics achievement?

_____no

_____yes -- briefly describe

B. Is your school making any (special/additional) efforts to promote either the district's policy or its own policy in this area?

_____no

_____yes -- briefly describe. (Clarify whether these reflect school initiatives regarding district policy, or the school's own policy.)

C. How has (this policy/these policies) affected your teaching?

4. TEXTBOOKS AND OTHER MATERIALS FOR MATHEMATICS

A. Are you aware of any special efforts by your district to promote policies in the area of textbooks and other materials for math?

_____no

_____yes -- briefly describe

B. Is your school making any (special/additional) efforts to promote either the district's policy or its own policy in this area?

_____no

_____yes -- briefly describe. (Clarify whether these reflect school initiatives regarding district policy, or the school's own policy.)

C. How has (this policy/these policies) affected your teaching?

5. POLICIES RECOMMENDING THE AMOUNT OF TIME THAT SHOULD BE SPENT ON MATHEMATICS.

A. Are you aware of any special efforts by your district to promote policies in the area of time to be spent teaching mathematics?

_____no

_____yes -- briefly describe

B. Is your school making any (special/additional) efforts to promote either the district's policy or its own policy in this area?

_____no

_____yes -- briefly describe. (Clarify whether these reflect school initiatives regarding district policy, or the school's own policy.)

C. How has (this policy/these policies) affected your teaching?

6. POLICIES ON USE OF SMALL GROUPS OR INDIVIDUALIZED INSTRUCTION IN MATHEMATICS.

A. Are you aware of any special efforts by your district to promote policies in the area of use of small group or individualized instruction in math?

_____no

_____yes -- briefly describe

B. Is your school making any (special/additional) efforts to promote either the district's policy or its own policy in this area?

_____no

_____yes -- briefly describe. (Clarify whether these reflect school initiatives regarding district policy, or the school's own policy.)

C. How has (this policy/these policies) affected your teaching?

7. POLICIES ABOUT STUDENT RETENTION OR GRADE-TO-GRADE PROMOTIONS (WHERE RELEVANT TO MATHEMATICS

A. Are you aware of any special efforts by your district to promote policies in the area of student retention or grade-to-grade promotion?

_____no

_____yes -- briefly describe

B. Is your school making any (special/additional) efforts to promote either the district's policy or its own policy in this area?

_____no

_____yes -- briefly describe. (Clarify whether these reflect school initiatives regarding district policy, or the school's own policy.)

C. How has (this policy/these policies) affected your teaching?

8. POLICIES ON INSERVICE FOR TEACHERS, WHERE THESE ARE RELEVANT TO MATH.

A. Are you aware of any special efforts by your district to promote policies in the area of math inservice for teachers?

_____no

_____yes -- briefly describe

B. Is your school making any (special/additional) efforts to promote either the district's policy or its own policy in this area?

_____no

_____yes -- briefly describe. (Clarify whether these reflect school initiatives regarding district policy, or the school's own policy.)

C. How has (this policy/these policies) affected your teaching?

9. POLICIES PROMOTING SPECIAL TOPICS IN MATHEMATICS (SUCH AS THE PRESS TO TEACH METRIC MEASUREMENT)

A. Are you aware of any special efforts by your district to promote the teaching of special topics in mathematics?

_____no

_____yes -- briefly describe

B. Is your school making any (special/additional) efforts to promote either the district's policy or its own policy in this area?

_____no

_____yes -- briefly describe. (Clarify whether these reflect school initiatives regarding district policy, or the school's own policy.)

C. How has (this policy/these policies) affected your teaching?

SPECIAL PROGRAMS

1. Does your school or district have special math projects or pullout programs in mathematics that affect one or more students in your classroom?

   ___No--SKIP to REACTIVITY

   ___Yes--briefly describe

2. How has this program affected your teaching ?

REACTIVITY

1. In what ways has working with our project affected your math instruction this year?

(Probe to clarify vague references to any of our types of content decisions:

topic selection

pacing

sequencing

standards

total time on mathematics

A. Porter
5/25/83

ADDITION TO THE N=34 END-OF-YEAR

TEACHER INTERVIEW

Please insert the following two questions on p. 23 of the 5/23/83 end-of-year teacher interview.

1. During the year, you indicated having had conversations with other teachers about mathematics instruction. What sorts of things were covered in those conversations?

2. You also indicated having had conversations with your principal concerning math instruction. What sorts of things were covered in those conversations?

A. Porter Spring 1985

5/21/85

Policy Influence Interview Schedule

N = 34 Study

This is _____ calling from the Institute for Research on Teaching. How are you?

For 2 1/2 years now, we have been asking about your mathematics teaching. I'd like about one hour of your time to review a few things with you. Is this a good time for us to talk? Great (or, when can I call you back?).

Just as you have given us detailed information about your math instruction, so have 33 other teachers across 6 Michigan school districts. As you can imagine, it has been no small task organizing the data and preparing for analyses. We have, however, completed some preliminary analyses on changes in teachers' practices.

Not surprisingly, the analyses show many areas where practice has stayed pretty much the same. But today I want to discuss some of the changes with you--changes which our analysis of questionnaires and interviews indicate you and others in your district have made in mathematics instruction. First, I'll ask if an identified change is consistent with your recollections. What I am especially interested in are the reasons you made the change. In some cases, it may be difficult to remember why a change was made, but we are interested in anything you can remember.

NOTE TO INTERVIEWERS: In taking notes on what teachers say, record their degree of certainty in a) remembering a change and b) providing reasons for having made the change. When a policy is volunteered as the reason for a change having been made, ask:

a. Is that a change in policy for your district? If so, ask them to describe the nature of the change.

b. What about the policy made it have an effect on your practice [listen for prescriptiveness, consistency, authority, and power, but don't probe to get a full account on these attributes].

c. What other changes did the policy cause you to make?

When a policy is not volunteered as a reason for having made a change but in preparation for the interview you had hypothesized that the policy would have been mentioned, ask directly whether or not the policy in question had an effect.

1. Time [Only ask of teachers who changed their time allocation. Item 1, p. 8 of August 1982 and item 1, p. 10 of Fall 1984]

Our records indicate that three years ago, the 1981/82 school year, you typically taught math _____ (e.g. 5 days a week for 45 minutes each day). Last year, 1983/84, you typically taught math _____ (e.g. 5 days a week for 30 minutes each day).

NOTE TO INTERVIEWERS: For teachers who taught math in groups or at multiple time points in a day, appropriate modification in wording will be necessary

1) Is this change in your math schedule consistent with what you remember?

2) Why did you make this change?

II. Topics

We have collected a great deal of information on the topics you and other teachers in your district have covered in math. I am going to identify just a few of the changes you and other teachers in your district made between the 1981/82 school year and last year. In each case, I am interested in whether the change is consistent with what you remember and what reasons you can give for the change.

NOTE TO INTERVIEWERS: The retrospective questionnaire data for each district is to be analyzed to identify changes in topic coverage a) that appear typical for teachers in the district, either by grade level or across grades and b) changes that are unique to a teacher but bring them into line with others. There should be a balance in asking about topics added and topics dropped. Ideally, there would be questions about conceptual understanding, skills and applications. Since what can be asked is in large part dependent upon the data for the district, compromises will likely be necessary.

III. Closing Question on Topics

The topics I have just identified represent only some of the several changes you made in your coverage of math. Do any other changes you have made, either topics added or dropped from instruction, stand out in your mind as especially important?

[If yes, for each topic identified, ask]

Why did you make this change in your content coverage?

[Here as elsewhere, probe for reasons, especially reasons relating to changes in school policies and practices.]

IV. Grouping [Ask only of teachers who changed their grouping practices]

Have you changed your student grouping practice or degree of individualization since the year you kept logs for us? How? Why?

V. Standards

Among the important decisions that you make, several relate to standards for student achievement. Think of a full school year for a typical student; over the past 3 or 4 years:

a) has the number of topics you teach for mastery remained about the same? [If no, ask why.]

b) Again thinking of a full school year for a typical student, has the number of topics you teach for exposure only remained about the same? [If no, ask why.]

c) over the past 3 or 4 years, have your requirements for what would constitute "A" level or "excellent" work in math changed in any substantial way? [If yes, ask in what ways and why.]

d) How about your standards for what constitutes work that is barely passing rather than failing? Have they changed in any substantial way? [If yes] In what ways and why.

VI. Styles of Textbook Usage

Has your style of math textbook use changed since the year you kept logs for us? [If yes] How did you change your style of textbook use? Why did you change?

NOTE TO INTERVIEWERS: In preparation for the interview, review page 12 of the 1984 teacher questionnaire to see what the teacher reported as to district influence. If the influence of policies appears weak from the interview thus far but appeared strong in the questionnaire, point out the discrepancy and ask:

What am I missing in what we have covered so far?

VII Changes in District Policies

This section of the interview has three parts each of which is unique to the district of the teacher being interviewed.

a. Identify each important change in district policy over the period of our study using the three curriculum coordinator interviews (spring, 1982; summer, 1983; summer, 1984). For each policy change, identify and ask (only for policies not yet sufficiently covered):

1. Are you familiar with this new policy in your district?
2. In what ways has this change in policy affected your practices in mathematics instruction? [Probe for each of our four content decisions.]

b. For each strong district policy not yet sufficiently described, ask:

In what ways has this policy affected your practice in math? [Probe for each of our four content decisions.]

c. NOTE TO INTERVIEWERS: All teachers are to be asked about inservice activities:

Have you attended any inservice activities this year that focused on math?

[If yes] Describe these inservice activities. [Probe for sponsor and content.]

[If not clear from earlier section of the interview, ask]

Did your participation have any influence on your math instruction? [Probe for our four content decisions.]

NOTE TO INTERVIEWERS: Check F'84 questionnaire for which of these to ask

VIII. Last fall you indicated on a questionnaire that if you were free to do whatever you wanted in math, you would definitely change

a. the total number of minutes spent on math each week

i) Does this still reflect your feeling?

ii) What changes would you like to make?

iii) Why don't you feel free to change?

b. the extent to which all your students study the same topics

i) Does this still reflect your feeling?

ii) What changes would you like to make?

iii) Why don't you feel free to change?

c. the selection of topics you teach in math

i) Does this still reflect your feeling?

ii) What changes would you like to make?

iii) Why don't you feel free to change?

d. the degree of mastery required on certain topics

i) Does this still reflect your feeling?

ii) What changes would you like to make?

iii) Why don't you feel free to change?

Appendix F

District Policy Study: Teacher Questionnaires (1982-85)

1. General Topics
2. Subtopic Experience and Belief
3. Topic Coverage, Intentions, and Experience

GT, 4th,

I. General Topics

General Topic:

ADDITION OF WHOLE NUMBERS

1. Are you likely to give any attention to this general topic in teaching fourth graders during the coming year?

   1 Yes

   2 No → SKIP TO THE NEXT PAGE

2. Do you particularly enjoy teaching this general topic to fourth graders?

   1 Yes

   2 No

3. Which of the following is the single most important influence on what you decide to cover within this general topic? (Circle one number only.)

   1 Textbook

   2 Official curriculum guide/ objectives

   3 Tests

   4 My own beliefs

   5 Advice from another teacher at my grade level

   6 Advice from the principal

   7 Advice from another person in the district

   8 Other

4. What is your best guess for the average period of time your fourth graders will spend on this general topic during the coming year?

   6 More than twenty school days

   5 Eleven to twenty days

   4 Six to ten days

   3 Three to five days

   2 One to two days

   1 Less than one day → SKIP TO THE NEXT PAGE

5. In which of the following months are you likely to devote more than one day to this general topic? In cases of individualized or small group instruction, answer in terms of the months in which more than half of the fourth graders in your class will be covering this subtopic. If you are uncertain, give your best guess. (Circle as many as apply.)

1	2	3	4	5	6	7	8	9	10	11
Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	Impossible to predict

93

GENERAL TOPICS QUESTIONNAIRE

THE SAME FIVE QUESTIONS WERE ASKED ABOUT EACH OF THE FOLLOWING TOPICS:

ADDITION OF WHOLE NUMBERS

SUBTRACTION OF WHOLE NUMBERS

MULTIPLICATION OF WHOLE NUMBERS

DIVISION OF WHOLE NUMBERS

NUMERATION

FRACTIONS/MIXED NUMBERS

DECIMALS

MONEY

PERCENTS

RATIOS/PROPORTIONS

EQUATIONS INVOLVING UNKNOWNS OR MORE THAN ONE OPERATION

MEASUREMENT

GEOMETRY

PROBABILITY AND STATISTICS

USE OR INTERPRET GRAPHS, FIGURES OR TABLES

STORY PROBLEMS

PROBLEMS INVOLVING LOGICAL REASONING

COMPUTER APPLICATIONS

Subtopic: SEB, 4th, 2, Subto

Write whole numbers in expanded notation (e.g., 7,048 = __ thousands + __ hundreds + __ tens + __ ones)

1. How much experience do you have in teaching this subtopic?

   1 I have never taught it

   2 I have never taught it to fourth graders, but I have taught it in other grades

   3 I have taught it occasionally when I taught fourth grade

   4 I have almost always taught it when I taught fourth grade

   5 I have always taught it whenever I have taught fourth grade mathematics

2. How many fourth grade teachers do you believe teach this topic regularly?

   1 All or almost all

   2 Most

   3 Some

   4 None or very few

3. In which one of the following grades of your school is this subtopic chiefly taught? (Circle one number only.)

   3 Third grade

   4 Fourth grade

   5 Fifth grade

   6 Sixth grade

   0 None of the above

4. In your opinion, how important is it for the average student to thoroughly master this subtopic sometime during grades 1-6?

   5 Essential

   4 Very important

   3 Somewhat important

   2 Not very important

   1 Not at all important

5. How knowledgeable do you feel about teaching this subtopic (in terms of both method and content)?

   1 Very knowledgeable

   2 Fairly knowledgeable

   3 Slightly knowledgeable

   4 Not at all knowledgeable

IF THIS IS A SUBTOPIC THAT YOU HAVE NEVER TAUGHT TO FOURTH GRADERS, SKIP TO THE NEXT SUBTOPIC

6. In your opinion, would any parents or staff members in your district be likely to show concern if none of your fourth grade students were taught this subtopic?

   1 Definitely yes

   2 Probably yes

   3 Probably not

   4 Definitely not

7. When you teach fourth graders, does your treatment of this subtopic usually differ substantially from that found in the textbook(s) used in the class?

   1 Yes

   2 No

   3 Subtopic not covered in the textbook(s) used in the class

SEB--SUBTOPICS, EXPERIENCE AND BELIEFS QUESTIONNAIRE

THE SAME SEVEN QUESTIONS WERE REPEATED ABOUT THE FOLLOWING 15 SUBTOPICS:

1. WRITE WHOLE NUMBERS IN EXPANDED NOTATION
2. ESTIMATE PRODUCTS (IN WHOLE NUMBER MULTIPLICATION)
3. SOLVE FOR MISSING FACTORS WHERE THE MISSING FACTOR IS A WHOLE NUMBER
4. RECOGNIZE RELATIONSHIP BETWEEN DIVISION AND SUBTRACTION
5. DIVISION WITH TWO DIGIT DIVISORS, NO REMAINDERS
6. IDENTIFY EQUIVALENT FRACTIONS AND DECIMALS
7. ADD UNLIKE FRACTIONS
8. FIND PERCENTS OF WHOLE NUMBERS
9. ESTIMATE MEASUREMENT VALUES IN METRIC SYSTEM
10. COMPUTE PERIMETER OR AREA OF RECTANGLES
11. USE KNOWLEDGE OF GEOMETRIC PROPERTIES OR CHARACTERISTICS TO IDENTIFY MISSING PARTS OF GEOMETRIC FIGURES
12. COMPUTE AVERAGES OR MEANS
13. MAKE GRAPHS, FIGURES OR TABLES
14. SOLVE STORY PROBLEMS THAT REQUIRE USE OF TWO OR MORE OPERATIONS/STEPS
15. DEMONSTRATE KNOWLEDGE AND SKILLS IN COMPUTER APPLICATIONS

Part A

CCE, 4th,
also F '84, p 3

Topic Coverage, Intentions and Experience

Teachers cannot cover all the topics that might be taught during any given year. To understand your teaching better, we would like to know what you are likely to cover during the coming year and also what you covered last year. For each of the subtopics listed below please circle the appropriate numbers as follows:

First, at the left, under COVERAGE LAST YEAR, 1981-82, indicate whether more than half, less than half, or none of the fourth graders in your last year's mathematics class(es) were taught the subtopic listed. (Skip the columns for coverage last year if you did not teach fourth grade mathematics last year.)

Then at the right, under LIKELIHOOD OF COVERAGE, 1982-83, estimate as best you can the likelihood that more than half of the fourth graders in your mathematics class(es) will be taught the subtopics during the coming year.

COVERAGE LAST YEAR 1981-82: Taught to more than half of the fourth graders	Taught to at least one-fourth (1/4) but not more than half of the fourth graders	Taught to fewer than one-fourth (1/4) of the fourth graders	SUBTOPIC	LIKELIHOOD OF COVERAGE in 1982-83 (with more than ½ your 4th graders): Definitely will cover (chances are 90% or more)	Probably will cover (chances are 50% or more)	Probably will not cover (chances are less than 50%)	Definitely will not cover (chances are less than 10%)
			NUMERATION				
1	2	3	Identify place values in decimals (identify numerals in tenths place, hundredths place, etc.)	1	2	3	4
1	2	3	Write whole numbers in expanded notation (e.g., 7,048 = __ thousands + __ hundreds + __ tens + __ ones)	1	2	3	4
1	2	3	Apply associative, distributive or other mathematical properties (e.g., (5 + 6) + 2 = 5 + (6 + __) or n + 5 = 5 + __)	1	2	3	4
1	2	3	Round off whole numbers	1	2	3	4
1	2	3	Complete number patterns/sequences (e.g., 3, 6, __, 12 or 4, 9, __, 25)	1	2	3	4
1	2	3	Interpret/translate numbers written in other bases (e.g., 8 written in base two is ?)	1	2	3	4
1	2	3	Identify unions or intersections of sets (e.g., the intersection of males and blue eyes includes which of your classmates?)	1	2	3	4

(Remember, for every subtopic listed, circle one number at the left and one at the right.)

CCE, 4th,
also F '84, p

COVERAGE LAST YEAR 1981-82: Taught to more than half of the fourth graders	Taught to at least one-fourth (1/4) but not more than half of the fourth graders	Taught to fewer than one-fourth (1/4) of the fourth graders	SUBTOPIC	LIKELIHOOD OF COVERAGE in 1982-83 (with more than ½ your 4th graders): Definitely will cover (chances are 90% or more)	Probably will cover (chances are 50% or more)	Probably will not cover (chances are less than 50%)	Definitely will not cover (chances are less than 10%)
			ADDITION OF WHOLE NUMBERS				
1	2	3	Add columns of multiple digit numbers (or single and multiple digit numbers)	1	2	3	4
1	2	3	Solve missing addend problems (e.g., 22 + □ = 34 or 45 + n = 56)	1	2	3	4
			SUBTRACTION OF WHOLE NUMBERS				
1	2	3	Subtract multiple digit numbers with borrowing	1	2	3	4
1	2	3	Solve for missing values in subtraction equations (e.g., 32 - □ = 28 or 24 - n = 12)	1	2	3	4
			MULTIPLICATION OF WHOLE NUMBERS				
1	2	3	Interpret concrete or pictorial representations of multiplication	1	2	3	4
1	2	3	Recall multiplication facts	1	2	3	4
1	2	3	Multiply by single digit multipliers (other than multiplication facts)	1	2	3	4
1	2	3	Multiply by multiples of 10 or powers of 10 (e.g., 20 x 12, 300 x 6, 1000 x 12)	1	2	3	4
1	2	3	Multiply by multiple digit multipliers	1	2	3	4
1	2	3	Estimate products	1	2	3	4
1	2	3	Solve for missing factors where the missing factor is a whole number (e.g., 6 x □ = 48 or 60n = 480)	1	2	3	4
1	2	3	Solve story problems that focus on multiplication of two whole numbers	1	2	3	4

CCE, 4th,
also F '84

COVERAGE LAST YEAR 1981-82			SUBTOPIC	LIKELIHOOD OF COVERAGE in 1982-83 (with more than ¾ your 4th graders)			
Taught to more than half of the fourth graders	Taught to at least one of the fourth graders (but more than half)	Not taught to fourth graders		Definitely will cover (teachers are 95% or more)	Probably will cover (teachers are 50% or more)	Probably will not cover (teachers are less than 50%)	Definitely will not cover (teachers are less than 5%)
			DIVISION OF WHOLE NUMBERS				
1	2	3	Recognize relationship between division and subtraction	1	2	3	4
1	2	3	Recall division facts	1	2	3	4
1	2	3	Division with single digit divisors and remainders	1	2	3	4
1	2	3	Division with two digit divisors and no remainders	1	2	3	4
1	2	3	Estimate quotients	1	2	3	4
1	2	3	Check answers to division problems using multiplication	1	2	3	4
1	2	3	Identify factors/common factors	1	2	3	4
1	2	3	Solve story problems that focus on division of two whole numbers	1	2	3	4
			EQUATIONS INVOLVING UNKNOWNS OR MORE THAN ONE OPERATION				
1	2	3	Solve problems that require more than one operation and include parentheses/grouping symbols [e.g., (8 + 3)16 = ? or 519 - (16 x 24) = ?]	1	2	3	4
1	2	3	Solve for missing factors where the missing factor is a fraction, mixed number or decimal (e.g., 15n = 5)	1	2	3	4
1	2	3	Solve for the unknown in proportional equations (e.g., 5/8 = n/16)	1	2	3	4

also CCE,
F '84, 4th,

COVERAGE LAST YEAR 1983-84			SUBTOPIC	LIKELIHOOD OF COVERAGE IN 1984-85 (with more than ¾ your 4th graders)			
Taught to more than half of the fourth graders	Taught to at least one of the fourth graders (but more than half)	Not taught to fourth graders		Definitely will cover (teachers are 95% or more)	Probably will cover (teachers are 50% or more)	Probably will not cover (teachers are less than 50%)	Definitely will not cover (teachers are less than 5%)
			FRACTIONS/MIXED NUMBERS				
1	2	3	Identify pictorial or concrete representations of equivalent fractions	1	2	3	4
1	2	3	Identify equivalent mixed numbers/improper fractions (e.g., 8/3 = 2⅔)	1	2	3	4
1	2	3	Identify equivalent fractions and decimals (e.g., .25 = ¼)	1	2	3	4
1	2	3	Order or complete number sentences using >, <, or = for two or more fractions (e.g., which is largest? 5/8, 9/16 or 12/32; or 5/8 ◯ 9/16)	1	2	3	4
1	2	3	Add like fractions - same denominators	1	2	3	4
1	2	3	Add unlike fractions - different denominators	1	2	3	4
1	2	3	Divide fractions or mixed numbers by other fractions or mixed numbers (e.g., 1/3 ÷ 1/4 = ?)	1	2	3	4
1	2	3	Determine fractional parts of a whole number (e.g., 1/3 of 21 = ?)	1	2	3	4
1	2	3	Solve story problems that focus on fractions	1	2	3	4
			MONEY				
1	2	3	Make change	1	2	3	4
1	2	3	Compute prices with discounts expressed as fractions or percents	1	2	3	4
			DECIMALS				
1	2	3	Add two decimals (or a decimal and a whole number)	1	2	3	4

CCE, 4th, also F '84

COVERAGE LAST YEAR 1981-82			SUBTOPIC	LIKELIHOOD OF COVERAGE in 1982-83 (with more than ½ your 4th graders)			
Taught to more than half of the fourth graders	Taught to at least one of the fourth graders (but not more than half)	Not taught to fourth graders		Definitely will cover (chances are 80% or more)	Probably will cover (chances are 50% or more)	Probably will NOT cover (chances are less than 50%)	Definitely will NOT cover (chances are less than 30)
1	2	3	Multiply a decimal and a whole number	1	2	3	4
1	2	3	Divide a decimal by a whole number (e.g., 2).18)	1	2	3	4
1	2	3	Divide a whole number by a decimal (e.g., .18)360)	1	2	3	4
			PERCENTS				
1	2	3	Compute percents - determine what percent one number is of another (e.g., 12 is what percent of 25?)	1	2	3	4
1	2	3	Find percents of whole numbers (e.g., 33% of 300 = ?)	1	2	3	4
1	2	3	Solve story problems that focus on percents	1	2	3	4
			RATIOS/PROPORTIONS				
1	2	3	Name the ratio that describes the relation between two given sets (e.g., ratio of boys to girls in the classroom)	1	2	3	4
1	2	3	Use or interpret scales (e.g., scale drawings, maps)	1	2	3	4
			MEASUREMENT				
1	2	3	Estimate measurement values in metric system (e.g., approximate length of a line in cm; approximate weight in kg.)	1	2	3	4
1	2	3	Identify equivalent measurement values in English units (e.g., 6 qts. = 1½ gals.)	1	2	3	4
1	2	3	Tell time, standard clock face	1	2	3	4
1	2	3	Compute perimeter or area of rectangles	1	2	3	4

CCE, 4th, also F '84

COVERAGE LAST YEAR 1981-82			SUBTOPIC	LIKELIHOOD OF COVERAGE in 1982-83 (with more than ½ your 4th graders)			
Taught to more than half of the fourth graders	Taught to at least one of the fourth graders (but not more than half)	Not taught to fourth graders		Definitely will cover (chances are 80% or more)	Probably will cover (chances are 50% or more)	Probably will NOT cover (chances are less than 50%)	Definitely will NOT cover (chances are less than 30)
			GEOMETRY				
1	2	3	Plot positive and negative numbers on a grid	1	2	3	4
1	2	3	Name or draw geometric shapes or figures or parts of figures (e.g., parallelogram, equilateral triangle, radius, diagonal)	1	2	3	4
1	2	3	Name or draw transformations of shapes or figures (e.g., rotations, reflections, flips, slides, projections)	1	2	3	4
1	2	3	Interpret pictorial representations of area or volume	1	2	3	4
1	2	3	Use knowledge of geometric properties or characteristics to identify missing parts of geometric figures (e.g., given two angles, find missing angle of a triangle)	1	2	3	4
1	2	3	Develop skills in using a compass, ruler and/or protractor to make geometric constructions	1	2	3	4
			PROBABILITY AND STATISTICS				
1	2	3	Compute averages/means	1	2	3	4
1	2	3	Determine probability of occurrence of specified events (e.g., What are the chances of rolling an even-number with one die? What is the probability of being born on a Sunday?)	1	2	3	4
1	2	3	Solve problems involving combinations and/or permutations (e.g., How many different ways can 5 students line up at the drinking fountain? or How many outfits can Susie create from 6 blouses and 3 pairs of jeans?)	1	2	3	4

also CCE, 4th
F '84, 4th,

COVERAGE LAST YEAR 1983-84			SUBTOPIC	LIKELIHOOD OF COVERAGE IN 1984-85 (with more than 1/four 4th graders)			
Taught to more than half of the fourth graders	Taught to at least one of the fourth graders (but not more than half)	Not taught to fourth graders		Definitely will cover (Checked more than 90% of times)	Probably will cover (Checked more than 50% of times)	Probably will not cover (Checked more than 10% but less than 50%)	Definitely will not cover (Checked less than 10%)
			USE/INTERPRET GRAPHS, FIGURES, OR TABLES				
1	2	3	Summarize statistical data using graphs, figures, or tables (e.g., line graph, bar graph, circle graph)	1	2	3	4
1	2	3	Interpret and use information presented in a graph, figure, or table to solve problems (e.g., how many more stamps does Ann have than Bob?)	1	2	3	4
			STORY PROBLEMS				
1	2	3	Demonstrate understanding of the story problem without computation (e.g., by naming the operation(s) needed to solve the problem or by writing a number sentence that represents the problem or by drawing a picture or diagram that represents the problem)	1	2	3	4
1	2	3	Learn/apply a particular strategy for solving story problems, giving more attention to strategy than to solutions (e.g., underline key words, draw pictures, solve a much easier problem of same type, etc.)	1	2	3	4
1	2	3	Solve story problems that require use of two or more operations/steps (e.g., add, then multiply)	1	2	3	4
			PROBLEMS OF LOGICAL REASONING				
1	2	3	Use logical reasoning to solve NON-numerical problems (e.g., If A is B's father and B is C's son, what is the relationship of A and C?)	1	2	3	4
			COMPUTER APPLICATIONS				
1	2	3	Demonstrate knowledge and skills in computer applications (e.g., computer language, operation of computer, programming)	1	2	3	4

CCE, 4th,
also F '84,

PART B

Time on Mathematics

1. Use the following table to record a typical week's schedule for the mathematics you taught to fourth graders last year.

On the blanks, write the time scheduled for mathematics each day (e.g., 10:00 - 10:45 am)

If no time was scheduled on a given day, write none.

SPECIAL INSTRUCTIONS FOR TEACHERS TEACHING TWO OR MORE PERIODS OF MATH TO FOURTH GRADERS

If (a) you taught more than one period of math per day to fourth graders and (b) you had the same students for each of these periods, answer under Math Class 1 only.

If (a) you taught more than one period of math per day to fourth graders and (b) you had different students for each of these periods, answer separately for each class.

	Math Class 1	Math Class 2	Math Class 3
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			

2. During the coming year, about how many minutes per week do you expect your fourth graders to spend in mathematics class (or regularly scheduled time for working in school on mathematics assignments).

	Math Class 1	Math Class 2	Math Class 3
Minutes per week:			

only CCE, 4th

3. To what extent has the number of minutes per week devoted to fourth grade mathematics in your classroom changed over the past five years?

   1 Generally increased

   2 Generally decreased

   3 No general increase or decrease

   4 Don't know/can't remember

   5 Does not apply (e.g., have not taught fourth grade mathematics for five years)

only CCE, 4th

Part C

Other Questions

Eighth Grade Content

1 Here is a list of some topics from a typical eighth grade math text. How comfortable would you feel with this content, if you were assigned to teach 8th grade next year? Consider only your knowledge of the content, and not your level of confidence in using new teaching strategies. (Circle the appropriate response for each item.)

		Comfortable with this content now	Would need to review this content	Would need considerable study
a	Use of exponents and square roots	1	2	3
b	Write numbers in scientific notation	1	2	3
c	Multiply and divide fractions and mixed numbers	1	2	3
d	Divide decimals by decimals	1	2	3
e	Locate points on a 4 quadrant graph	1	2	3
f	Multiply and divide negative numbers	1	2	3
g	Solve for unknown quantities in algebraic equations	1	2	3
h	Compute surface area or volume	1	2	3
i	Construct congruent triangles	1	2	3
j	Estimate lengths in metric units	1	2	3
k	Find a percent of a number	1	2	3
l	Use combinations and permutations	1	2	3
m	Compute the mean, the median, the mode	1	2	3
n	Use or interpret scales (e.g., scale drawings, maps)	1	2	3
o	Use properties of triangles to find missing angles or sides	1	2	3

If you were free to do whatever you want in mathematics

2. During the coming year, if you were free to do whatever you want in fourth grade mathematics, how likely would you be to change your present plans in each of the following areas? (Circle the appropriate number in each row.)

	Definitely would change	Probably would change	Probably would not change	Definitely would not change	Not applicab (I am alread free to choo
a Total number of minutes fourth graders spend on mathematics each week	1	2	3	4	5
b The extent to which all 4th graders study the same topics	1	2	3	4	5
c The selection of topics you teach in mathematics	1	2	3	4	5
d The amount of time you spend on certain of these topics	1	2	3	4	5
e The order in which topics are covered	1	2	3	4	5
f The degree of mastery required on certain topics	1	2	3	4	5

101

Knowledge of Incoming Class

3. Which of the following statements best characterizes the knowledge you have of the fourth graders who will be in your mathematics class during the coming year?

1 I know many of the students personally; I have some knowledge of their past performance in mathematics

2 I know many of the students personally, but I have little or no knowledge of their past performance in mathematics

3 I do not know many of the students personally; I do know generally what type of student to expect as far as past performance in mathematics is concerned

4 I do not know many of the students personally, nor do I know what type of student to expect as far as past performance in mathematics is concerned

Part C

Other Questions

If you were free to do whatever you want in mathematics

1. During the coming year, if you were free to do whatever you want in fourth grade mathematics, how likely would you be to change your present plans in each of the following areas? (Circle the appropriate number in each row.)

	Definitely would change	Probably would change	Probably would not change	Definitely would not change	Not applicable (I am already free to choose)
a. Total number of minutes fourth graders spend on mathematics each week	1	2	3	4	5
b. The extent to which all 4th graders study the same topics	1	2	3	4	5
c. The selection of topics you teach in mathematics	1	2	3	4	5
d. The degree of mastery required on certain topics	1	2	3	4	5

Comparing last year's class with the year before

2. Think of the students you had for fourth grade mathematics last year (1983-84) as compared with the year before (1982-83). How did the two classes compare in level of mathematics ability?

5 1983-84 was much higher ability

4 1983-84 was somewhat higher

3 1983-84 was about the same as 1982-83

2 1983-84 was somewhat lower

1 1983-84 was much lower

0 I did not teach fourth grade mathematics both years

4. From what you already know about the fourth graders who will be in your mathematics class during the coming year, what level of mathematics ability do you expect?

5 Much higher than last year

4 Somewhat higher than last year

3 About the same as last year

2 Somewhat lower than last year

1 Much lower than last year

0 I do not have enough knowledge to predict

Sources of Information

5. Over the past two years, how important have each of the following been to you as sources of information about mathematics? (Circle the appropriate number in each row.)

	Very important	Fairly important	Of little importance	Of no importance
a Professional journals	1	2	3	4
b District inservice activities	1	2	3	4
c Other conferences or workshops	1	2	3	4
d Committee or staff meetings	1	2	3	4
e College or university courses	1	2	3	4
f District/building math coordinators	1	2	3	4
g Other teachers	1	2	3	4

If you rated any of these sources very or fairly important, please identify the particular journals, conferences, meetings, courses, etc., to which you refer.

_____

_____

_____

_____

_____

_____

_____

102

Sources of Information

3. Over the past two years, how important have each of the following been to you as sources of information about mathematics? (Circle the appropriate number in each row.)

	Very Important	Fairly Important	Of Little Importance	Of No Importance
a. Professional journals	1	2	3	4
b. District inservice activities	1	2	3	4
c. Other conferences or workshops	1	2	3	4
d. Committee or staff meetings	1	2	3	4
e. District curriculum documents and policies	1	2	3	4
f. College or university courses	1	2	3	4
g. District/building math coordinators	1	2	3	4
h. Other teachers	1	2	3	4

Changes in grouping practice

4. Have your grouping practices or degree of individualization in fourth grade mathematics changed significantly over the past three years?

   1. No

   2. Yes--- (a) What mode(s) of instruction receive less attention now than they did three years ago? (Circle all that apply)

      1. Whole class instruction
      2. Small group
      3. Individualized

      (b) What mode(s) receive more attention? (Circle all that apply)

      1. Whole class instruction
      2. Small group
      3. Individualized

Teaching Experience

6. Please fill in the following table of teaching experience. (Convert part time experience to full time equivalent and round to nearest year.) If you have taught split classrooms with children from more than one grade, identify the grades included in the split (e.g., 3rd/4th) as well as the number of years taught.

	Total years taught in this school	Total years taught in this district	Total years taught in other districts
Kindergarten	___	___	___
Grade 1	___	___	___
Grade 2	___	___	___
Grade 3	___	___	___
Grade 4	___	___	___
Grade 5	___	___	___
Grade 6	___	___	___
Grades 7 or 8	___	___	___
Grades 9,10,11 or 12	___	___	___
Split classes:			
___	___	___	___
___	___	___	___
___	___	___	___

7. Check to see if the last two columns above sum to your overall total years of teaching experience. Enter this overall total below.

_____ years

8. In how many of your overall total years of teaching experience have you not taught mathematics?

_____ years

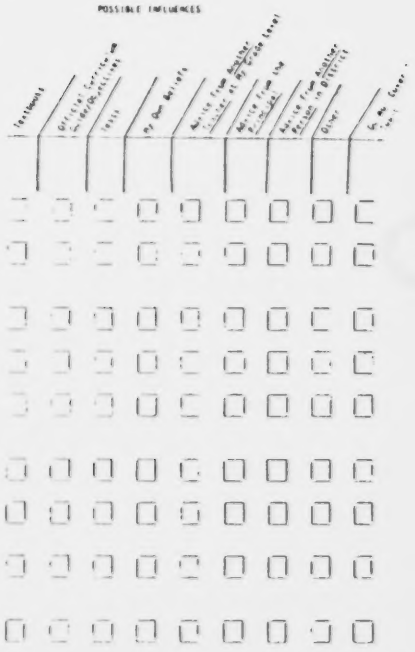
end, CCE

Second Administration, F84 (cont.)

Influences on what you teach

5. Think about the influences listed at the top of the chart below. Then, opposite each general topic, rank the THREE most important influences on what you decide to cover WITHIN that topic (i. e., in each row, write "1" in the box under the most important influence, "2" under the second most important influence, and "3" under the third most important). Check "do not cover" for topics you do not intend to teach at all to your fourth graders next year.

General Topics	Textbooks	Official Curriculum Guidelines/Objectives	Tests	My Own Beliefs	Advice from Teachers/Principals at My Grade Level	Advice from the Principal	Advice from Teachers/Principals in Districts	Other	Do not Cover this Topic
1. Addition of Whole Numbers	☐	☐	☐	☐	☐	☐	☐	☐	☐
2. Subtraction of Whole Numbers	☐	☐	☐	☐	☐	☐	☐	☐	☐
3. Multiplication of Whole Numbers	☐	☐	☐	☐	☐	☐	☐	☐	☐
4. Division of Whole Numbers	☐	☐	☐	☐	☐	☐	☐	☐	☐
5. Numeration (e. g., place value, expanded notation, comparing/order numbers, count by 2s, 3s, 5s, etc., completion of number patterns/sequences, types of numbers such as rational numbers, odd and even numbers, etc., properties, distributive or other mathematical properties, rounding off numbers, non-base-ten systems of numeration, negative numbers/integers, sets)	☐	☐	☐	☐	☐	☐	☐	☐	☐
6. Fractions/Mixed Numbers	☐	☐	☐	☐	☐	☐	☐	☐	☐
7. Decimals	☐	☐	☐	☐	☐	☐	☐	☐	☐
8. Money (e. g., determining the monetary value of coins and bills, making change, adding, subtracting, multiplying or dividing monetary values, computing prices with sales tax or discounts, using checkbooks, incorporating graphs or solving story problems involving money)	☐	☐	☐	☐	☐	☐	☐	☐	☐
9. Percents	☐	☐	☐	☐	☐	☐	☐	☐	☐



WORDS TOPICS (Continued)

10 Ratios/Proportions

11 Equations involving unknowns or more than one operation (e.g., $19 + 6 = 7 \cdot$, $(8 \cdot 3)/4 = 7$, $3/8$ of $n = 100$, $3/8 \cdot n/4$, word problems such as "if the circumference of a circle is 21 inches, what is its radius?")

12 Measurement (e.g., English system, metric system, nonstandard units, telling time, map reading)

13 Geometry

14 Probability and Statistics (e.g., summarizing data in graphs, figures or tables, statistical terms such as range, undirected sample, determining probabilities and problems involving combinations or permutations)

15 Use of Integrated Graphs, Figures or Tables

16 Story Problems (e.g., applications of addition, subtraction, multiplication, division, fractions, decimals, monetary values, percents, ratios, proportions or measurement)

17 Problems Involving Logical Reasoning (e.g., logic problems, geometry puzzles, open-ended problems, etc. where the emphasis is on higher levels of understanding of thinking rather than on calculation)

18 Computer Applications (e.g., knowledge of computer terms and functions, skill in operating a computer, and programming skills)

Appendix G

District Policy Study: Curriculum Coordinator Interview (1982-85)

Curriculum Coordinator Interview

(To be completed by August 15, 1984)

INSTRUCTIONS TO INTERVIEWER:

BEFORE THE INTERVIEW.

1. FILL IN THE BLANKS OF ASTERISKED QUESTIONS. USING LAST YEAR'S INTERVIEW. THIS QUESTIONNAIRE FOLLOWS THE OLD FORMAT, BUT YOU SHOULD BE PREPARED TO SUMMARIZE THE INFORMATION GAINED IN LAST YEAR'S INTERVIEW WHEN IT IS NOT APPROPRIATE TO SIMPLY REPEAT THE MULTIPLE CHOICES.

2. CHECKING THE MASTER LIST OF DISTRICT DOCUMENTS, REMIND YOURSELF WHICH DOCUMENTS WE ALREADY HAVE ON FILE.

3. AT APPROPRIATE POINTS IN THE QUESTIONNAIRE, MAKE NOTE OF DOCUMENTS WE DON'T HAVE BUT WHICH MIGHT EXIST, SO YOU CAN ASK FOR THEM. (THE MASTER LIST MAY GIVE YOU SOME IDEAS.) PROBE FOR DOCUMENTS, REPORTS (REGULAR AND SPECIAL), PLANS, POSITION PAPERS, GUIDELINES, WORKSHOP SUMMARIES, LISTS OF REGULATIONS, MINUTES OF MEETINGS, NEWS RELEASES, ETC. MINUTES OF PRINCIPALS' MEETINGS AND QUARTERLY/ANNUAL REPORTS HAVE BEEN ESPECIALLY FRUITFUL FOR US.

DURING THE INTERVIEW

1. IF THE INTERVIEW SUBJECT SEEMS RELUCTANT TO FURNISH DOCUMENTS, ASK "WHO IS THE BEST PERSON TO CONTACT FOR A COPY OF THIS DOCUMENT," THEN CONTACT THAT PERSON.

AFTER THE INTERVIEW

1. WRITE A LETTER, LISTING THE DOCUMENTS YOU'RE EXPECTING AND THANKING THE CURRICULUM COORDINATOR FOR THE INTERVIEW.

CURRICULUM COORDINATOR INTERVIEW

INTRODUCTION

Hello. This is _____ calling from Michigan State University's Institute for Research on Teaching. You may recall that last year we were working with teachers at _____, _____, and _____schools. We are currently analyzing that year's work and getting ready for the follow-up study.

I am calling today to ask about changes in district curriculum policy during this past year. You and I have talked before about district policy; knowing that people's responsibilities change, I guess I should begin by asking if you are still the best person to give me information about district policies and consistent practices concerning elementary school mathematics--such policies as instructional objectives, testing, promotion and retention, textbooks, etc.? (If not, then who?)

Would this be a convenient time for us to talk? My questions will probably take 30 to 40 minutes.

First, I'd like to check my understanding of district policy or consistent practice in each area; then I'd like to know if there have been any changes this year (1983-84). We'll begin with curriculum guides/instructional objectives.

CURRICULUM COORDINATOR INTERVIEW [1]

INSTRUCTIONAL OBJECTIVES

* #1 6. First, I will review the policies I understand your district had in place during the year of our study, 1982-83, that concern elementary mathematics; then I'll ask about changes. According to my notes, last year you indicated that your district had...

--- Curriculum guide/instructional objectives

--- students work through the objectives in a certain order

--- Objectives identified by grade level

--- Separate tests for each objective

--- Records of student mastery of objectives

--- List of assignments to identify textbook or workbook lessons for each objective

During this past academic year, have there been any changes in the substance of any of these policies ?

[ ] NO [IF NO, ASK..] During the past year, have existing policies been called to the attention of teachers and/or principals in any special way? [IF YES, PROBE TO UNDERSTAND. AND ASK FOR DOCUMENTS.]

[THEN ASK..] Do you anticipate changes in the next year or so, either in the objectives themselves or in the ways they are used? [DESCRIBE ANTICIPATED CHANGES, THEN SKIP TO PAGE 3, "TESTING"]

[ ] YES [IF YES, ASK QUESTIONS ON NEXT PAGE]

[1] This is the final version of an interview revised after each administration.

[ ] YES [IF YES, ASK..] Please describe the changes.

[THEN ASK..] How do we go about getting copies of the new _____(e.g., objectives, policy statements, recordkeeping system, etc.)

[THEN ASK ...] Have these changes been called to the attention of teachers and/or principals in any special way? [PROBE TO UNDERSTAND THESE EFFORTS]

[THEN ASK ...] Are there any documents that reflect or describe this emphasis-- memos, perhaps, or minutes of meetings where these changes were presented or discussed, etc.? How do we go about getting copies of these documents?

[THEN ASK..] Do you plan to make additional changes in this area in the next year or two? [DESCRIBE ANTICIPATED CHANGES]

ion conducted for this and
thus, item numbers are not

TESTING

Again, first I'll verify my understanding of the testing programs you had in place a year ago, then I'll ask you for changes. [INTERVIEWER, REFER AGAIN TO LIST OF POLICY DOCUMENTS RECEIVED FROM THIS DISTRICT, AND CHECK FOR POSSIBLE OTHERS.]

* #13-17 One year ago, my notes indicate that your district had:

___ Locally developed district-wide tests, given in grades _____

___ _____ _____(name of commercial standardized tests) given in grades _____

___ All the children in each of these grades are expected to take the tests, and none are excused

___ Building-level summaries of test results go to

___central administrators
___school board
___principals ----- principal gets all building
___teachers summaries, not just his own
___parents
___local newspaper

21. Within this last year, has the district made any changes in the testing program? [IF YES, DESCRIBE, AND SOLICIT DOCUMENTS.]

18. During the past year, were the results of MEAP and/or district-wide tests discussed at length at any of the following sorts of meetings? [MARK YES or NO FOR EACH.]

___Administrators' meetings attended by elementary school principals?
___Staff meetings in most elementary buildings?

___School board meetings?

___Group meetings of parents of elementary school children?
___Any other meetings? [DESCRIBE]

[IF YES TO ANY OF THE ABOVE, ASK..] Do minutes or other written records of any of these meetings exist? How might we obtain them?

22. Is it likely that changes will be made in this testing program within the next year or so? [PROBE FOR NATURE OF THE CHANGE; DO DOCUMENTS ALREADY EXIST?]

(new) [IF WE DO NOT HAVE THESE ALREADY, ASK..] We'd like to have a copy of the _____(standardized test) you gave in grade(s) 4 and/or 5 in 1982-83, the year we were working in your district. Who would be the best person to ask for this/these copy(s)? We would of course be happy to pay.

(new) Do you have reports containing longitudinal data on MEAP and/or standardized test results for your district? How may we obtain a copy of such longitudinal results?

* *23. In our conversation last year, I asked you some questions about possible uses of district-wide tests. As I verify my understanding of your past practices, please tell me if anything has changed in your district in the past year. [PROBE TO UNDERSTAND ANY CHANGES THAT ARE MENTIONED, AND SOLICIT DOCUMENTS WHERE THEY EXIST.]

In the past, district test results...

were/were not used to place students, either in ability groups or in classrooms which differ in ability. Has this changed?

Were/were not used to decide whether to promote individual students. Has this changed?

were/were not used to evaluate teachers. Has this changed?

were/were not used to identify schools where students are performing better or less well than might be expected. Has this changed?

Were/were not used to determine whether principals should receive a salary increase for high student achievement. Has this changed?

were/were not used for other allocation of funds. Has this changed?

[IF ANY CHANGES ARE MENTIONED, PROBE TO UNDERSTAND, AND SOLICIT DOCUMENTS.]

[IF ANY CHANGES WERE MENTIONED IN QUESTION 23, THEN ASK..] Have these changes been called to the attention of teachers and/or principals in any special way? [IF YES, PROBE TO UNDERSTAND, AND SOLICIT DOCUMENTS.]

(new) Do you anticipate changes in the way test results are used, in the next year or so? [IF YES, PROBE TO UNDERSTAND, AND SOLICIT ANY DOCUMENTS THAT MAY BE ALREADY AVAILABLE.]

(new) What things, if any, does the district do to call the attention of students, teachers or principals to the MEAP or standardized tests given in your district? [IF YES, PROBE, AND SOLICIT DOCUMENTS]

110

(new) Does your district offer advice to teachers about how they should or should not use test results? [IF YES, PROBE, AND SOLICIT DOCUMENTS]

TEXTBOOKS

* 24,27. Now for textbooks. Again, I want to review the textbook policies and practices you had in place a year ago, and to ask you to indicate any changes (SUMMARIZE ANSWERS FROM LAST YEAR'S INTERVIEW.)

Series used in 4th and 5th grade mathematics is

_____

This series is used by ...(indicate one)

____every elementary teacher in the district

____every 4th grade teacher in the district, but not necessarily by teachers in other grades

____every elementary teacher in the same building

According to my notes from last year, the district (takes/does not take) steps to see that teachers follow their textbooks closely. (IF SUCH STEPS WERE MENTIONED LAST YEAR, DESCRIBE THEM BRIEFLY NOW.)

27. During this past year, what steps, if any, has the district taken to see that teachers follow their textbooks closely? (open-ended question)

28. Within the last year has the district made any changes in its policy or consistent practices concerning how elementary school mathematics textbooks are to be selected or used? (IF YES, PROBE FOR NATURE OF THE CHANGE AND FOR SUPPORTING DOCUMENTS.)

(IF APPROPRIATE, ASK..) Has the district called these changes to the attention of teachers and/or principals in any special way? (IF YES, PROBE AND ASK FOR DOCUMENTS.)

29. Is it likely that changes will be made within the next year or so in district policy or preferred practice concerning the selection or use of elementary school mathematics textbooks? (IF YES, PROBE FOR NATURE OF CHANGE, AND SOLICIT DOCUMENTS)

STUDENTS

[REMEMBER, YOU MAY SUMMARIZE COMMENTS FROM LAST YEAR RATHER THAN RESTATE THE MULTIPLE CHOICE OPTIONS.]

* *30 In your district a year ago, schools were

___encouraged to individualize mathematics instruction

___encouraged not to individualize mathematics instruction

___left to themselves in making this decision

___other (interviewer made notes)

[ASK..] Has there been any change in this district practice in the past year?

[] YES...[PROBE TO UNDERSTAND NATURE OF CHANGE, AND SOLICIT DOCUMENTS.]

[THEN ASK..] Have these changes been called to the attention of teachers and/or principals in any special way? [PROBE, AND SOLICIT DOCUMENTS.]

111

[] NO. [ASK...] Have the current practices been called to the attention of teachers and/or principals in any special way? [IF YES, PROBE, AND SOLICIT DOCUMENTS]

[SUMMARIZE, IF YOU PREFER, RATHER THAN REPEAT THE MULTIPLE CHOICE]

* •31. A year ago, according to my notes, your district's position on retention in the elementary grades was that schools were...

___encouraged to retain some students in grade

___encouraged not to retain students in grade

___left to themselves in making the decision about retaining students

___other (with interviewer notes)

[ASK] In the past year, have there been any changes in the district position on retention?

[] YES...[PROBE TO UNDERSTAND NATURE OF CHANGES, AND ASK FOR DOCUMENTS]

[THEN ASK..] Have these changes been brought to the attention of teachers and/or principals in some special way? [IF YES, PROBE AND ASK FOR DOCUMENTS]

[] NO.. [ASK..] Has the existing position been brought to the attention of teachers and/or principals in any special way? [IF YES, PROBE, AND ASK FOR DOCUMENTS]

[YOU MAY PREFER TO SUMMARIZE LAST YEAR'S CONVERSATION RATHER THAN TO REPEAT THE MULTIPLE CHOICE BELOW]

* *3c. A year ago, as I understand it, your district's position on pupil placement was that schools were ...

___ encouraged to assign students so that classrooms differ in ability or achievement.

___ encouraged not to assign students so that classrooms differ in ability or achievement.

___ left to themselves in deciding whether to assign students so that classrooms differ in achievement or ability.

___ other (interviewer make notes)

[ASK] In the past year, have there been any changes in the district's position on assigning students to classrooms?

( ) YES...(PROBE TO UNDERSTAND NATURE OF CHANGES, AND ASK FOR DOCUMENTS)

[THEN ASK...] Have these changes been brought to the attention of teachers and/or principals in some special way? (IF YES, PROBE AND ASK FOR DOCUMENTS)

( ) NO . . [ASK] During this past year, has the district's existing position been brought to the attention of teachers and/or principals in any special way? (IF YES, PROBE AND ASK FOR DOCUMENTS)

[YOU MAY PREFER TO SUMMARIZE LAST YEAR'S INTERVIEW RATHER THAN TO REPEAT THE MULTIPLE CHOICES BELOW.]

✳ *33. A year ago, according to my notes, your district's position on the use of small ability groups within an elementary mathematics class was that schools were ...

___encouraged to use small ability grouos in elementary mathematics classes

___encouraged not to use small ability groups in elementary mathematics classes

___left to themselves in making the decision

[ASK] In the past year, have there been any changes in the district policy on the use of small ability groups within the elementary mathematics classroom?

[] YES...[PROBE TO UNDERSTAND NATURE OF CHANGES, AND ASK FOR DOCUMENTS]

[THEN ASK...] Have these changes been brought to the attention of teachers and/or principals in some special way? [IF YES, PROBE AND ASK FOR DOCUMENTS]

[] NO . . [ASK] During this past year, have existing policies been brought to the attention of teachers and/or principals in any special way? [IF YES, PROBE AND ASK FOR DOCUMENTS]

TIME ALLOCATIONS

* #34. A year ago, according to my notes, you said that your district...

...had guidelines suggesting that the minimum time to be spent in mathematics instruction in the 4th grade was _____.

^ ...had no guidelines suggesting the minimum amount of time to be spent in mathematics instruction in grades K-6.

[ASK] In the past year, have there been any changes in the district guidelines for the minimum amount of time to be spent on mathematics instruction in elementary mathematics classrooms?

[] YES...[PROBE TO UNDERSTAND NATURE OF CHANGES, AND ASK FOR DOCUMENTS]

[THEN ASK...] Have these changes been brought to the attention of teachers and/or principals in some special way? [IF YES, PROBE AND ASK FOR DOCUMENTS]

[] NO . . [ASK] During this past year, have existing policies been brought to the attention of teachers and/or principals in any special way? [IF YES, PROBE AND ASK FOR DOCUMENTS]

(new) Is it likely that changes will be made within the next year or so in the recommended time to be spent in mathematics instruction in elementary classrooms? [IF YES, PROBE TO UNDERSTAND]

DISTRICT CONTENT EMPHASES

* *36 A year ago, I read you a list of topics in elementary school mathematics and asked whether your district singles any of these out for special emphasis. I'm going to review your answers and ask about changes. [IN THE LEFT MARGIN, CIRCLE "S" IF THE TOPIC IS CURRENTLY EMPHASIZED. USE THIS CHECKLIST FOR QUESTION 36A.]

(S) [ASK] A year ago, you said that fractions (was/was not) singled out for special emphasis. Is that still the case? [FOR ANY CHANGE, ASK WHY.

(S) A year ago, you said that decimals (was/was not) singled out for special emphasis. Is that still the case? [FOR ANY CHANGE, PROBE TO FIND OUT WHY]

(S) A year ago, you said that geometry (was/was not) singled out for special emphasis. Is that still the case? [FOR ANY CHANGE, PROBE TO FIND OUT WHY.]

(S) A year ago, you said that metric measurement (was/was not) singled out for special emphasis. Is that still the case? [FOR ANY CHANGE, PROBE TO FIND OUT WHY.]

36A [FOR EACH TOPIC SINGLED OUT--I.E., FOR EACH CIRCLED "S" IN THE LEFT MARGIN, ASK..] What has the district done to emphasize the importance of this topic? [PROBE AND ASK FOR DOCUMENTATION.]

[ASK] A year ago, you said that computer applications (other than for drill and practice) (was/was not) singled out for special emphasis. Is that still the case? [FOR ANY CHANGE, PROBE TO FIND OUT WHY.]

A year ago, you said that "problem-solving and applications" was / was not singled out for special emphasis. Is that still the case? [FOR ANY CHANGE, PROBE TO FIND OUT WHY.]

A year ago, you said that probability and statistics (was/was not) singled out for special emphasis. Is that still the case? [FOR ANY CHANGE, PROBE TO FIND OUT WHY.]

36A. [FOR EACH TOPIC SINGLED OUT--I.E., FOR EACH CIRCLED "3" IN THE LEFT MARGIN, ASK..] What has the district done to emphasize the importance of this topic? [PROBE AND ASK FOR DOCUMENTATION.]

✳ #37. Last year, you indicated that _____ full-time equivalent persons are assigned to provide district-wide supervision of K-6 mathematics. Has there been any change here? [IF YES, DESCRIBE, AND PROBE TO UNDERSTAND WHY THE CHANGE IN EMPHASIS ON SUPERVISION. ANY DOCUMENTS?]

✳ #38. Last year, you indicated there (were / were not) specialists assigned to elementary buildings who work primarily on mathematics with classroom teachers and/or students.

Has this changed? [IF YES, PROBE TO UNDERSTAND THE NATURE OF THE CHANGE AND WHAT UNDERLIES IT.]

✳ #40. According to my notes from last year, your district (has--does not have) a standing mathematics committee which is concerned with the elementary school curriculum. Is this still the case?

[] YES

[] NO .. [IF NO, WHY THE CHANGE?]

[IF DISTRICT HAS A MATH COMMITTEE, ASK...] Has this committee become more active in the past year? [IF YES, PROBE TO UNDERSTAND THE NATURE OF THE ACTIVITY AND THE CAUSE.]

[ASK] Was the mathematics curriculum the subject of a formal district review this past year (1984-85)?

[] YES . . [PROBE FOR WHAT HAPPENED]

[] NO . . [ASK] Will mathematics be the subject of such a review next year?

[] YES
[] NO

BUILDING AUTONOMY

* *42. The term "building autonomy" (has/has not) been used to describe your district. Would you still (apply/not apply) that term to your district?

[] YES
[] NO . . . [ASK] How has your district changed? [PROBE FOR NATURE OF THE CHANGE AND ANY DOCUMENTATION]

(new '83) During the past academic year, have you instituted any new requirements for teachers beyond those required by the state for certification?

[] YES . . [PROBE FOR CHANGE AND ASK FOR DOCUMENTS]

[] NO

(New '83) Since this time last year, has your district become involved in any sort of school accreditation or evaluation?

[] YES . . [PROBE FOR THE ROLE OF MATH; REQUEST APPROPRIATE DOCUMENTS]

[] NO

115

(new) During the past year, have elementary teachers attended a district-sponsored inservice having to do with mathematics? [IF YES, DESCRIBE, AND DOCUMENT IF POSSIBLE.]

(new) Has your district instituted a policy about homework? [IF YES, PROBE AND SOLICIT DOCUMENTS.]

(new) Are there any other changes in your district that you feel may have had important influence on elementary school teachers?

[] NO

[] YES ..[PROBE AND SOLICIT DOCUMENTS.]

[THEN ASK..] How have you brought these to the attention of teachers? [PROBE, AND SOLICIT DOCUMENTS.]

Appendix H

District Policy Study: Principal Interview (Spring 1983)

PRINCIPAL INTERVIEW (N=34)

Hello, my name is _____ and I am part of a team at the Institute for Research on Teaching that has been working with (name teachers) in your school this year. I would like to ask you some questions on the phone about your school. It will probably take 15 to 20 minutes to answer these questions. If it turns out that you want to talk about any of the points at length, we can arrange a second telephone call (or possibly meet at your school). Is now a convenient time, or should I call back later?

Introductory Questions

1. How long have you been a principal in this school?
   If only 1 or 2 years, ask:
   Were you a principal before coming to this school? For how long?

2. About how many students are in the school?

3. What grades are included?

4. A. Does your school or district have special math projects or pullout programs in mathematics that affect one or more students in grades 4-6 in your school?

   _____no -- SKIP to question 5

   _____yes -- briefly describe

   In what ways would math instruction change in your school if these programs were discontinued?

5. Does this school differ in important ways from other schools in the district? How?

   (Probe for characteristics of teachers, students, SES)

Perceptions of School and District Policies

As you know, we are interested in school and district policies which are relevant to mathematics instruction. For each of the following policy areas, I am going to ask you what you think we should know about what has

been happening in your school or district this year. In other words, what special efforts have been made which are important to understanding the mathematics instruction in your school. We are concerned with district policies, school policies or practices you and your staff have agreed to emphasize. I should add that we are asking about the same policy areas in each of the districts we study, so some of the areas may not apply to you.

Again, the question is what special efforts have been made in your school or district this year which are particularly important to understanding the mathematics instruction in your school?

(Justify, if necessary, emphasis on this year by saying that we already know something about previous years at the district level.)

(Probe to distinguish between school and district efforts.)

1. Let me start with math objectives. What special efforts have been made in your school or district concerning math objectives which are important to understanding the mathematics instruction in your school?
2. Now tell me about special efforts concerning Michigan Assessment Testing?
3. Standardized or district generated tests of mathematics achievement (name tests).
4. Textbooks and other materials for mathematics.
5. Policies recommending the amount of time that should be spent on mathematics.
6. Policies on use of small groups or individualized instruction in mathematics.
7. Policies about student retention or grade-to-grade promotion (where relevant to matheamtics).
8. Policies on inservice for teachers where these are relevent to math.
9. Policies promoting special topics in mathematics (such as the press to teach metric measurement).

Closing

1. In your view, what school or district policy has had the greatest influence on mathematics instruction offered in your school? Why?
2. Are there any ways that haven't already been mentioned that you personally attempt to promote student achievement in your building?